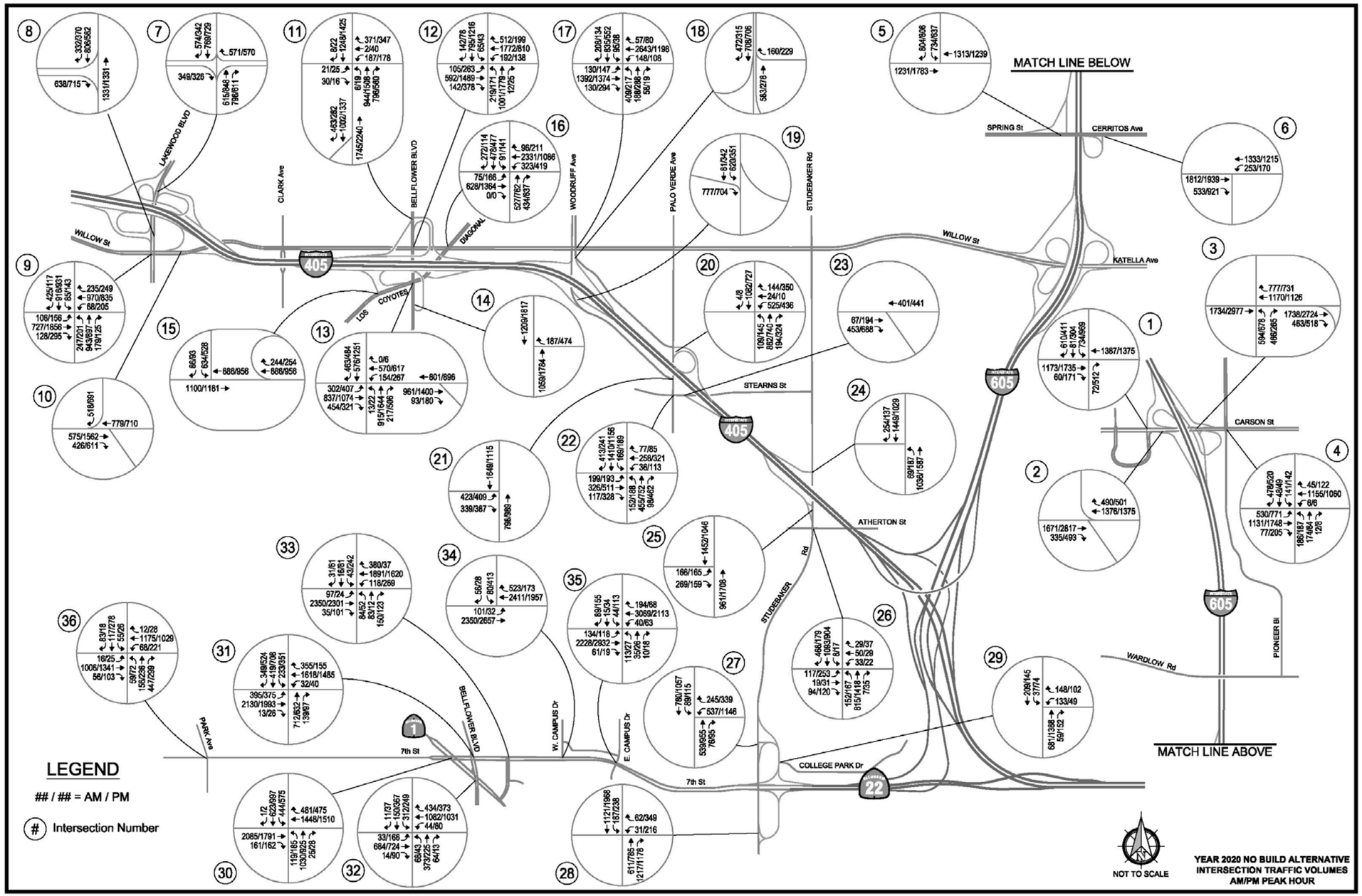

Figure 3.1.6-26: 2020 No Build Intersection Traffic Volumes AM/PM Peak Hours – Locations in Los Angeles County

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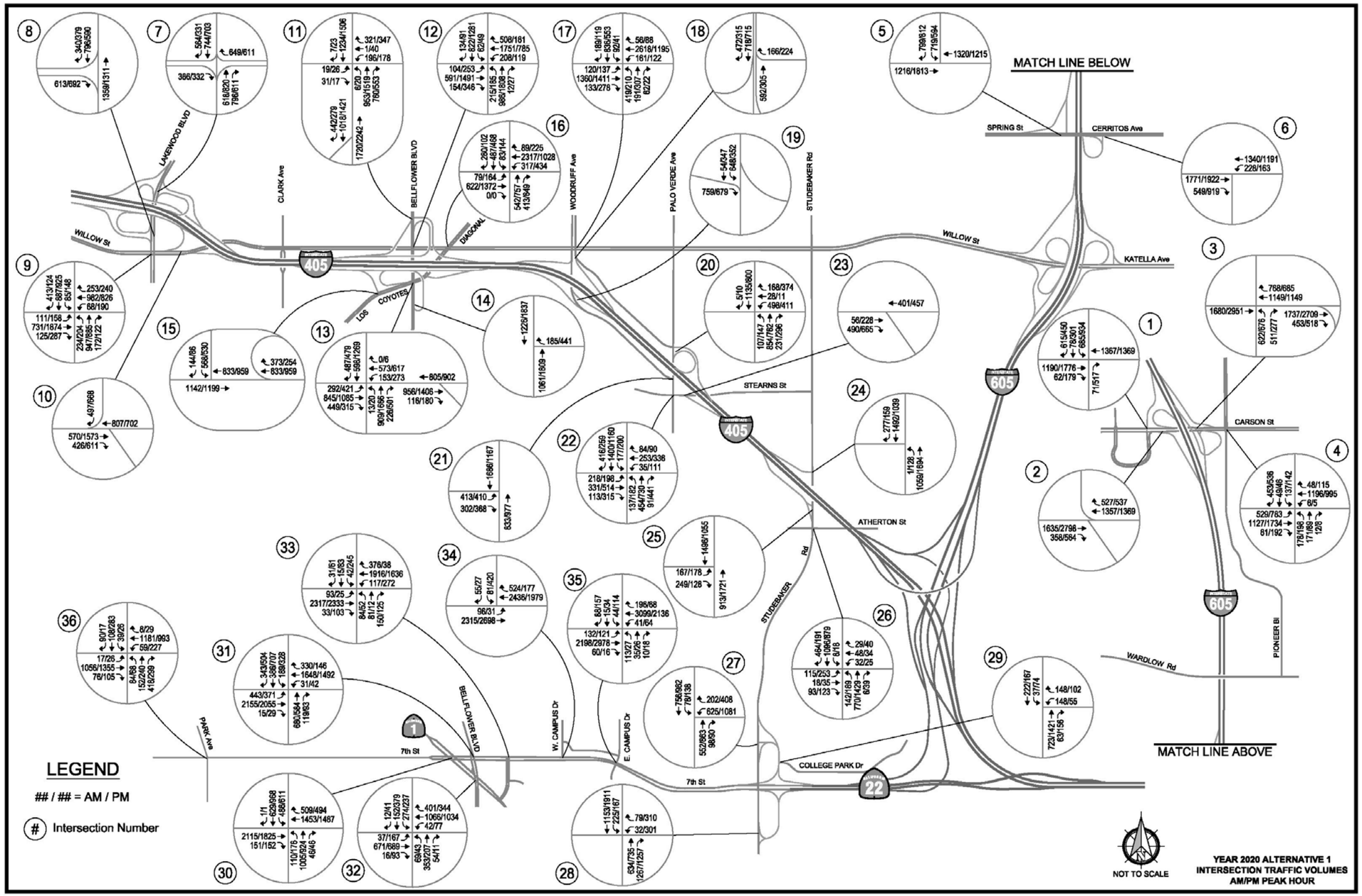

Figure 3.1.6-27: 2020 Alternative 1 Intersection Traffic Volumes AM/PM Peak Hours – Locations in Los Angeles County

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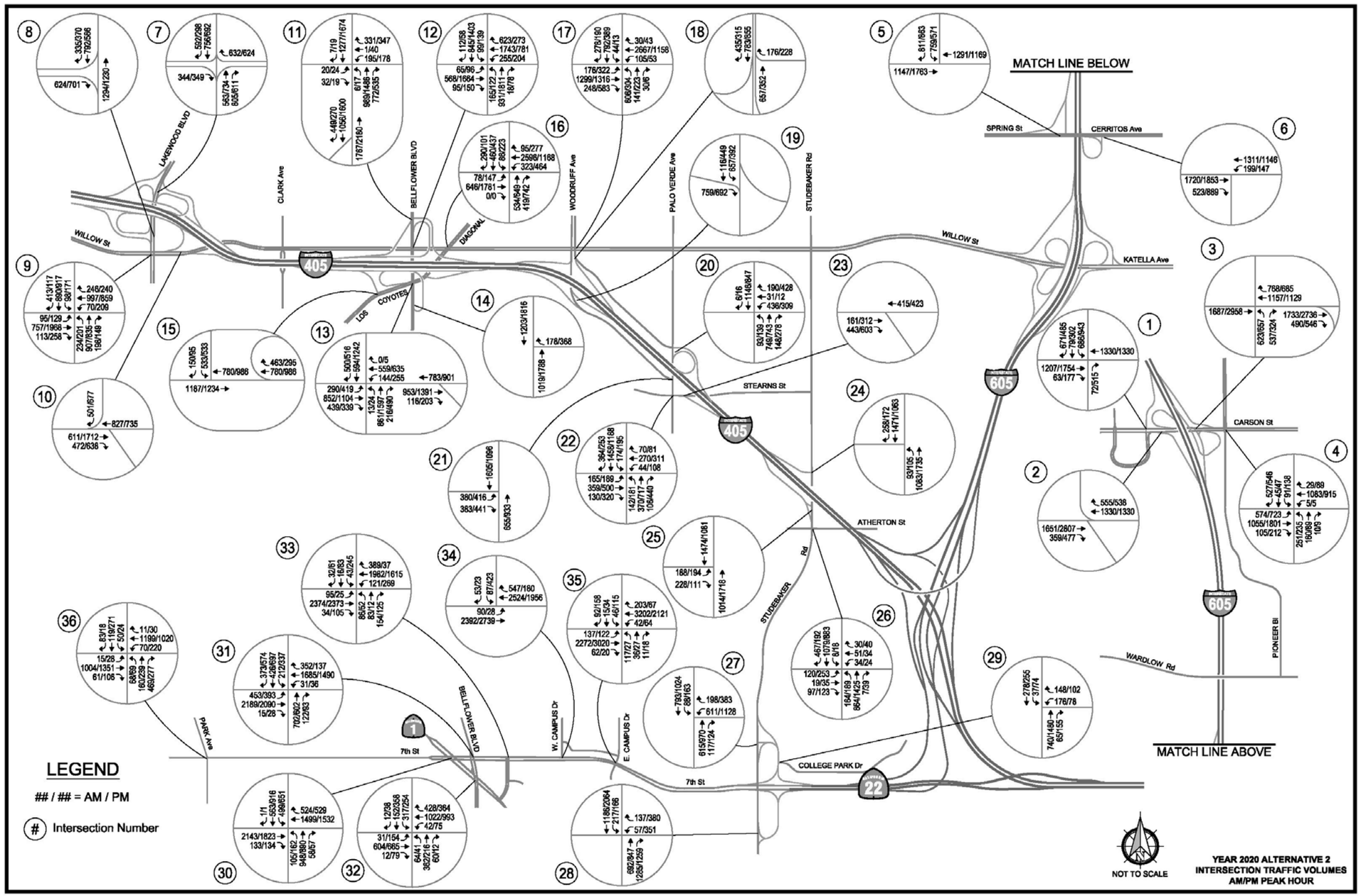

Figure 3.1.6-28: 2020 Alternative 2 Intersection Traffic Volumes AM/PM Peak Hours – Locations in Los Angeles County

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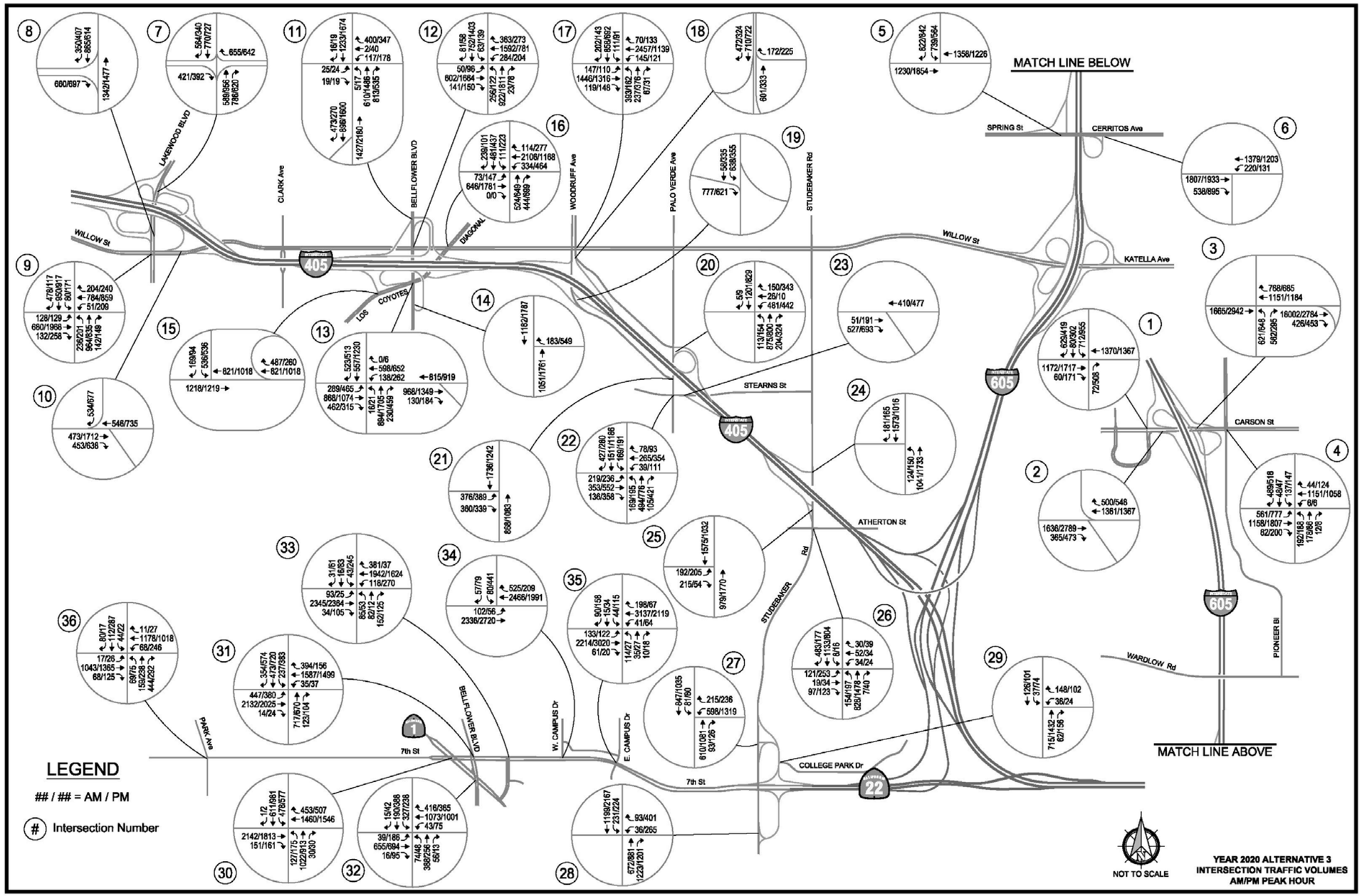

Figure 3.1.6-29: 2020 Alternative 3 (Preferred Alternative) Intersection Traffic Volumes AM/PM Peak Hours – Locations in Los Angeles County

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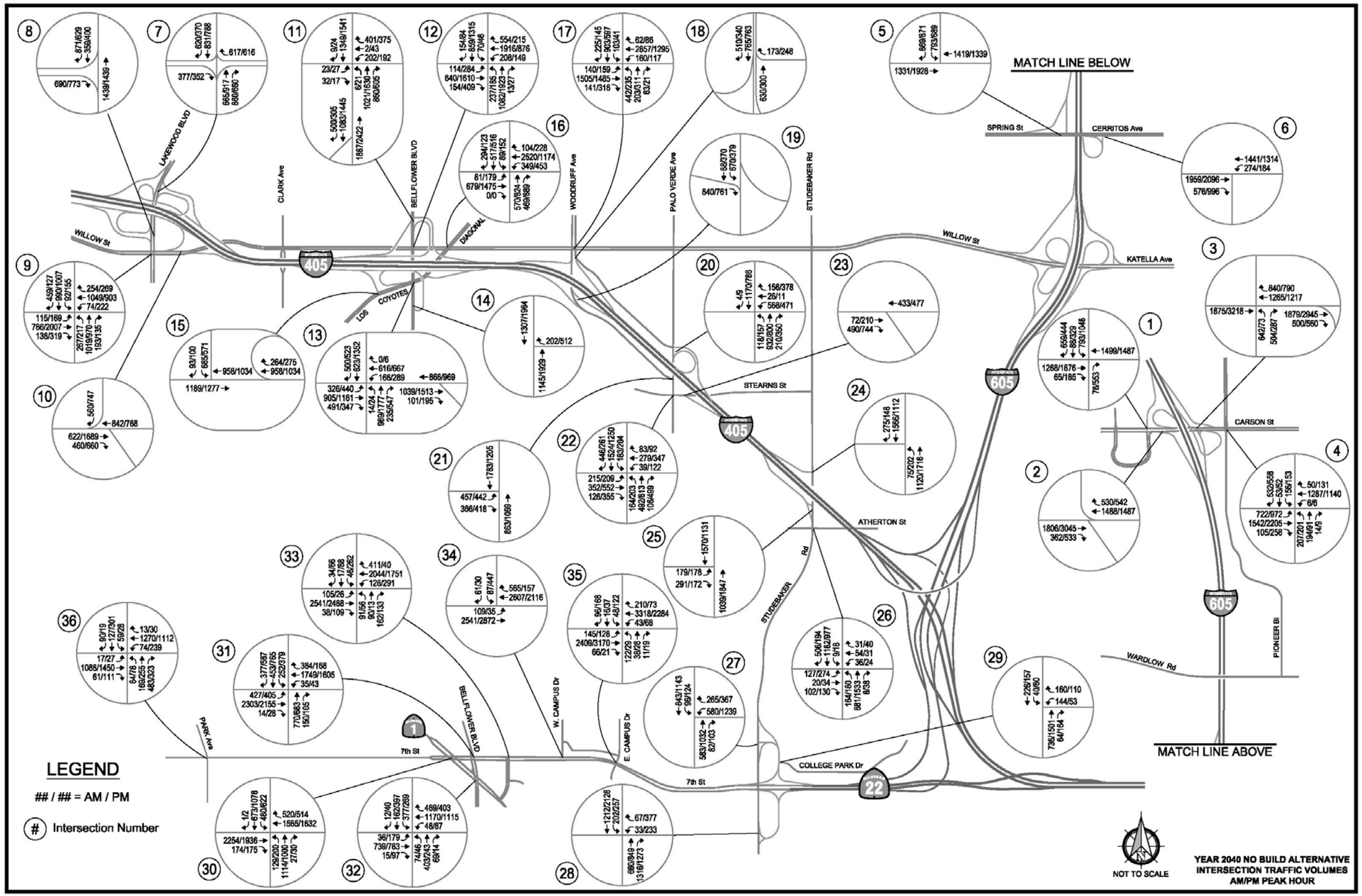

Figure 3.1.6-30: 2040 No Build Intersection Traffic Volumes AM/PM Peak Hours – Locations in Los Angeles County

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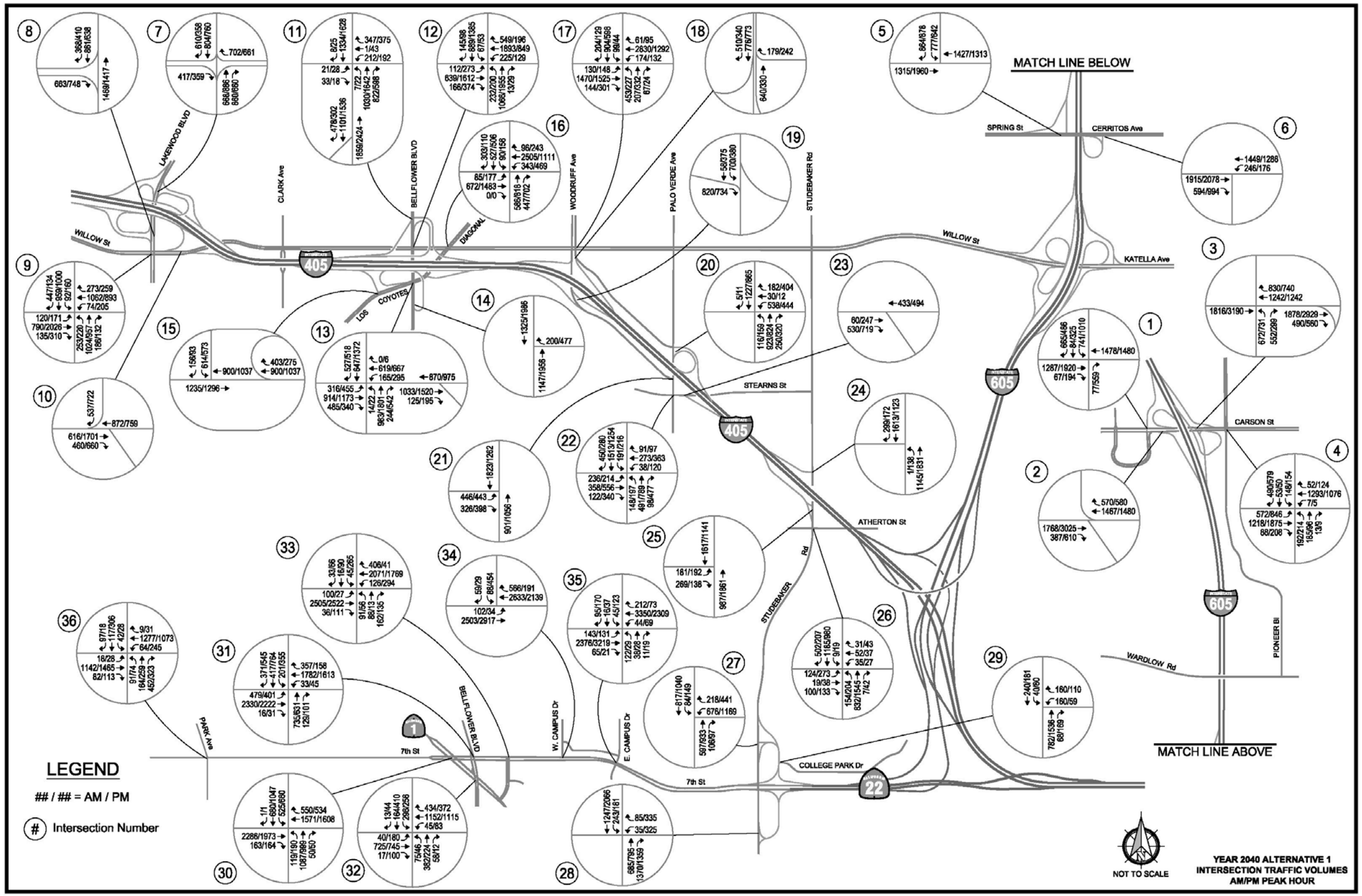

Figure 3.1.6-31: 2040 Alternative 1 Intersection Traffic Volumes AM/PM Peak Hours – Locations in Los Angeles County

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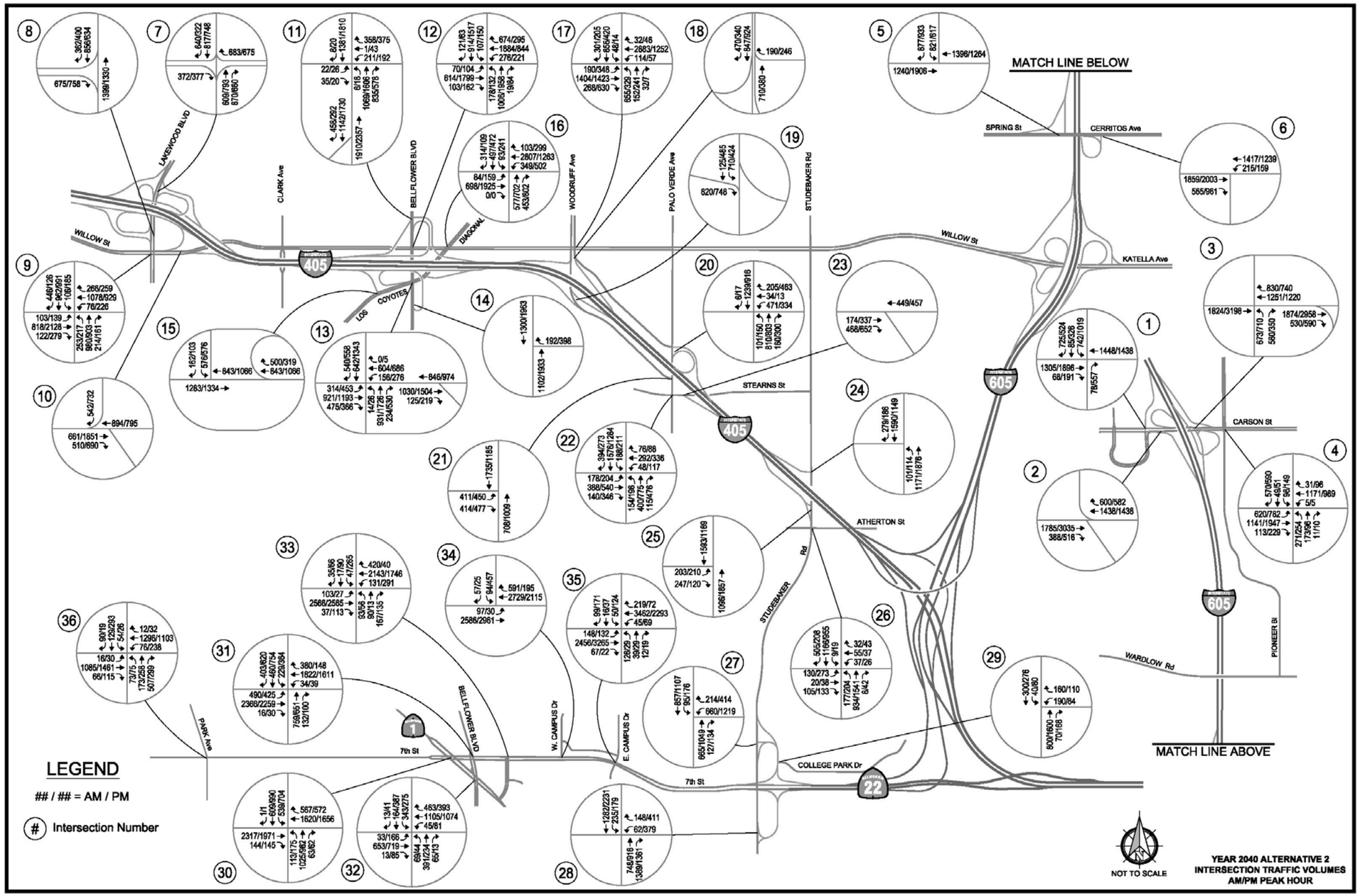

Figure 3.1.6-32: 2040 Alternative 2 Intersection Traffic Volumes AM/PM Peak Hours – Locations in Los Angeles County

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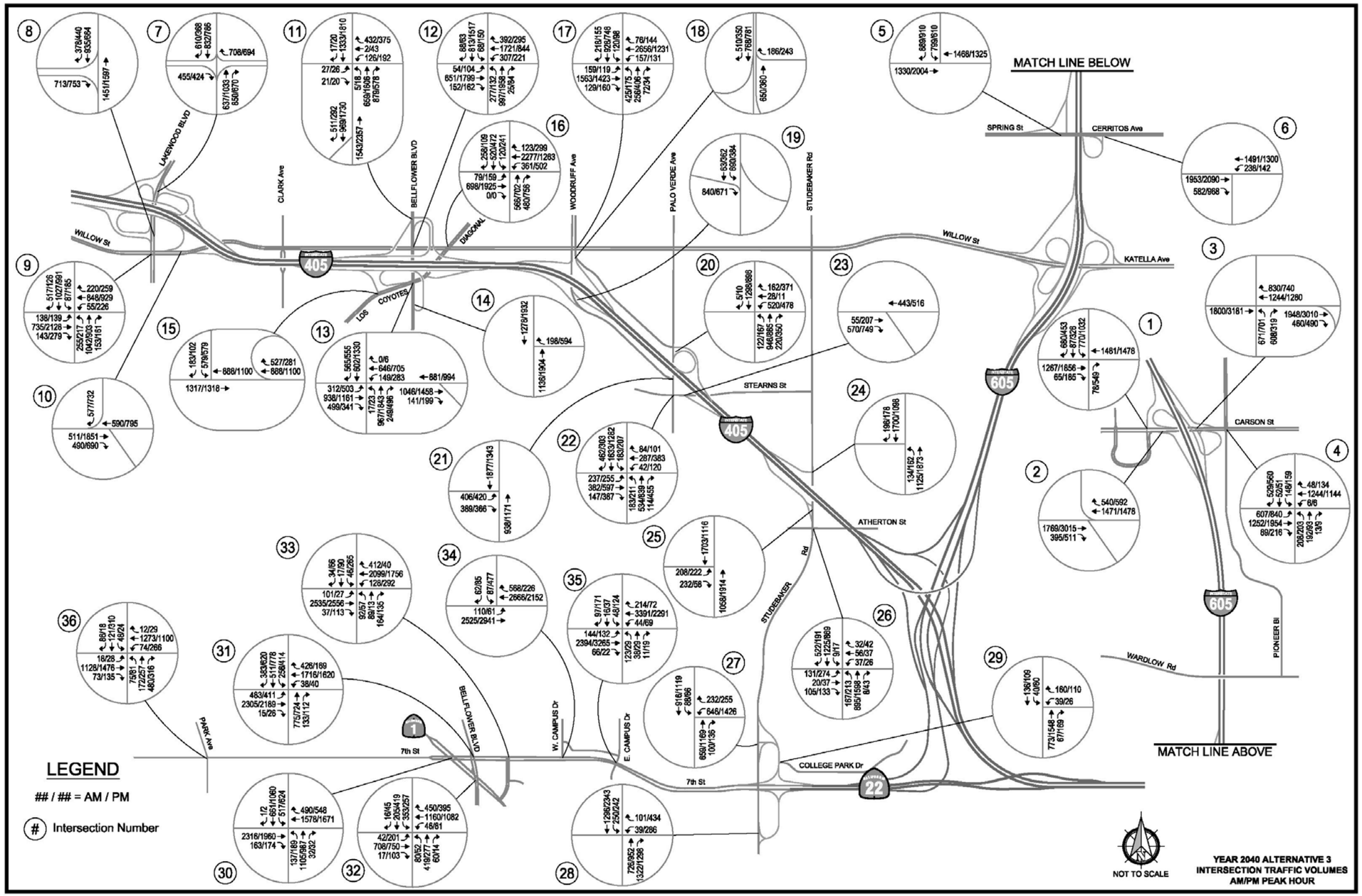

Figure 3.1.6-33: 2040 Alternative 3 (Preferred Alternative) Intersection Traffic Volumes AM/PM Peak Hours – Locations in Los Angeles County

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No Build Alternative

Freeway Mainline. The Opening Year (2020) and Design Year (2040) No Build Alternative AM/PM peak-hour traffic volumes for the freeway mainline and all interchange ramps within the study area in Los Angeles County are presented in Figures 3.1.6-18 and 3.1.6-22, respectively. The freeway mainline and all interchange ramps are assumed to be unchanged from the existing conditions. There are no committed projects within the study area in Los Angeles County.

V/C Ratio and LOS. Table 3.1.6-13 presents the LOS and v/c ratios for peak hours of the No Build Alternative in 2020 for the GP lanes of the freeway mainline. Under no-build conditions in year 2020, the I-405 freeway mainline between I-605 and Lakewood Boulevard is anticipated to operate at LOS F in the AM peak hour in the northbound direction and LOS D and F in the southbound direction. In the PM peak hour, the I-405 freeway mainline is anticipated to operate at LOS F in the northbound direction and LOS E and F in the southbound direction. The range of v/c ratios in the GP lanes of the I-405 freeway mainline during the AM peak hour is **0.90 to 1.16** and **0.98 to 1.29** during the PM peak hour.

The I-605 mainline is anticipated to operate at LOS C in the AM peak hour in the northbound direction and LOS E in the southbound direction in 2020. In the PM peak hour, the I-605 freeway mainline is anticipated to operate at LOS E in the northbound direction and LOS D in the southbound direction. The v/c ratios in the GP lanes of the I-605 freeway mainline during the AM peak hour are **0.80** in the northbound direction and **1.05** in the southbound direction. During the PM peak hour, the v/c ratios are **1.00** in the northbound direction and **0.98** in the southbound direction.

The SR-22/7th Street freeway mainline is anticipated to operate at LOS F in the AM peak hour in the eastbound direction and LOS E in the westbound direction in 2020. In the PM peak hour, the SR-22/7th Street freeway mainline is LOS E in both directions. The v/c ratios in the GP lanes of the SR-22/7th Street freeway mainline during the AM peak hour is **1.19** in the eastbound direction and **1.06** in the westbound direction. During the PM peak hour, the v/c ratio is **1.08** in the eastbound direction and **1.05** in the westbound direction.

Table 31.16-14 presents the v/c ratios for peak hours of the No Build Alternative in 2020 for the HOV (carpool) lanes. The range of v/c ratios in the HOV lanes during the AM peak hour is **1.01 to 1.35** and **0.99 to 1.51** during the PM peak hour (shown in bold in the table).

Table 3.1.6-24 presents the LOS and v/c ratios for peak hours of the No Build Alternative in 2040 for the GP lanes of the freeway mainline. Under no-build conditions in year 2040, the freeway mainline between I-605 and Lakewood Boulevard is anticipated to operate at LOS F in the AM peak hour in the northbound direction and LOS D and F in the southbound direction. In the PM peak hour, the I-405 freeway mainline is anticipated to operate at LOS F in the northbound direction and LOS E

and F in the southbound direction. The range of v/c ratios in the GP lanes of the I-405 freeway mainline during the AM peak hour is **0.97 to 1.26** and **1.06 to 1.40** during the PM peak hour.

The I-605 mainline is anticipated to operate at LOS D in the AM peak hour in the northbound direction and LOS F in the southbound direction in 2040. In the PM peak hour, the I-605 freeway mainline is anticipated to operate at LOS E in both directions. The v/c ratios in the GP lanes of the I-605 freeway mainline during the AM peak hour are **0.86** in the northbound direction and **1.13** in the southbound direction. During the PM peak hour, the v/c ratios are **1.08** in the northbound direction and **1.06** in the southbound direction.

The SR-22/7th Street mainline is anticipated to operate at LOS F in the eastbound direction and LOS E in the westbound direction during the AM and PM peak hours in 2040. The v/c ratios in the GP lanes of the SR-22/7th Street freeway mainline during the AM peak hour is **1.28** in the eastbound direction and **1.14** in the westbound direction. During the PM peak hour, the v/c ratios are **1.17** in the eastbound direction and **1.14** in the westbound direction.

Table 3.1.6-25 presents the v/c ratios for peak hours of the No Build Alternative in 2040 for the HOV (carpool) lanes. The range of v/c ratios in the HOV lanes during the AM peak hour is **1.09 to 1.46** and **1.08 to 1.63** during the PM peak hour (shown in bold in the table).

A more-detailed link-by-link presentation of the No Build Alternative in 2020 and 2040 traffic conditions for GP and HOV lanes is included in Appendix L2.

Freeway Connector Volumes. Tables 3.1.6-15 and 3.1.6-26 provide the 2020 and 2040 forecast for the no-build condition, respectively, of branch connector volumes and v/c ratios on ramps within the I-405/I-605/ SR-22/7th Street interchange not presented above under the Orange County heading. Branch connectors are forecast to operate with v/c ratios ranging from **0.24 to 1.13** in 2020 and from **0.27 to 1.22** in 2040 under the no-build condition (shown in bold in the table). The branch connector from I-605 southbound/I-405 southbound to 7th Street is anticipated to operate with a v/c ratio in excess of 1.00 in 2040 during the AM peak hour.

Arterials, Intersections, and Interchanges. The No Build Alternative AM and PM peak-hour traffic volumes for arterial and interchange study locations within the study area in Los Angeles County for 2020 and 2040 are illustrated in Figures 3.1.6-26 and 3.1.6-30, respectively. A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2020 no-build conditions is provided in Table 3.1.6-12 for all of the study intersections. In Table 3.1.6-12 for 2020 under no-build conditions, the study intersections are anticipated to operate at LOS D or better, except for four intersections (as shown in bold) that are anticipated to operate at LOS E or F during either the AM or PM peak hour or both.

Table 3.1.6-24: Mainline GP Lane Density, LOS, and Volume-to-Capacity Ratio for Year 2040 – Locations in Los Angeles County

Segment	Direction	Existing 2009						No Build – 2040*						Alternative 1 – 2040*						Alternative 2 – 2040*						Alternative 3 – 2040*					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
		V/C	Den	LOS	V/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS
I-405 Mainline I-605 to Studebaker Road	NB	0.98	38.2	E	0.81	26.9	D	1.26	**	F	1.40	**	F	1.29	**	F	1.52	**	F	1.29	**	F	1.48	**	F	1.33	**	F	1.53	**	F
	SB	0.85	26.6	D	0.84	31.9	D	1.00	33.7	D	1.06	44.1	E	1.02	35.1	E	1.06	44.1	E	1.02	35.1	E	1.07	44.7	E	1.05	37.2	E	1.11	**	F
I-405 Mainline Studebaker Road to Lakewood Boulevard	NB***	0.94	52.4	F	0.90	38.1	E	0.97	57.0	F	1.10	50.2	F	0.99	58.3	F	1.19	55.1	F	0.99	57.9	F	1.16	51.5	F	1.03	60.9	F	1.20	56.1	F
	SB***	0.95	42.0	E	0.90	61.6	F	1.09	50.1	F	1.13	78.5	F	1.09	49.9	F	1.13	78.5	F	1.09	50.3	F	1.13	78.3	F	1.11	51.3	F	1.16	81.2	F
I-605 Mainline I-405 to Carson Street	NB	0.81	26.3	C	0.97	35.7	E	0.86	28.3	D	1.08	44.4	E	0.90	29.8	D	1.09	**	F	0.81	26.2	D	0.95	34.7	D	0.84	27.4	D	0.95	35.0	D
	SB	1.09	41.1	E	1.00	36.1	E	1.13	**	F	1.06	40.6	E	1.15	**	F	1.08	42.4	E	1.17	**	F	1.08	42.2	E	1.13	**	F	1.11	**	F
SR-22/ 7th Street Mainline Studebaker Road to I-405/ I-605	EB	0.86	26.1	D	1.05	35.6	E	1.28	**	F	1.17	**	F	1.19	**	F	0.98	31.8	D	1.18	**	F	0.95	30.4	D	1.12	41.3	E	0.96	30.8	D
	WB	1.00	33.0	D	0.71	21.1	C	1.14	43.4	E	1.14	43.1	E	1.15	43.9	E	1.09	38.8	E	1.14	42.9	E	1.11	40.9	E	1.11	40.9	E	1.31	**	F

NB – Northbound; SB – Southbound; EB – Eastbound; WB – Westbound; Den – Density; LOS – Level of Service; V/C – Volume-to-Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio.

* – For future conditions, the D/C ratio is used instead of the V/C ratio.

** – Density is not calculated under HCM because volume exceeds the range of the density algorithm.

*** – Density and LOS is based on weaving analysis.

Table 3.1.6-25: Mainline HOV Volume-to-Capacity Ratio for Year 2040 – Locations in Los Angeles County

Segment	Direction	Existing 2009		No Build 2040*		Alternative 1 2040*		Alternative 2 2040*		Alternative 3 2040*	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
I-405 HOV I-605 to Studebaker Road	NB	0.84	0.87	**1.46**	**1.63**	**1.41**	1.16	**1.35**	**1.58**	1.42	**1.65**
	SB	0.50	0.95	1.25	1.21	1.31	1.17	1.29	**1.17**	1.36	1.44
I-405 HOV Studebaker Road to Lakewood Boulevard	NB	**1.06**	0.74	**1.09**	1.28	1.21	1.20	1.20	1.37	**1.25**	1.43
	SB	0.50	**1.04**	1.25	1.21	1.31	1.25	1.29	1.18	1.32	1.44
I-605 HOV I-405 to Carson Street	NB	**0.45**	**0.38**	**1.09**	1.43	**1.08**	**1.42**	**1.08**	1.43	1.08	1.09
	SB	0.63	0.43	1.25	**1.08**	1.28	**1.10**	1.31	**1.17**	**0.88**	**0.82**

NB – Northbound; SB – Southbound; EB – Eastbound; WB – Westbound; V/C – Volume-to-Capacity Ratio

Bolded V/C and D/C (demand volume-to-capacity) ratios indicate the minimum and maximum values as discussed in the text.

* – For future conditions, the D/C ratio is used instead of the V/C ratio.

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Table 3.1.6-26: 2040 Branch Connector Volumes and Volume-to-Capacity Ratios – Locations in Los Angeles County

	Existing 2009				No Build – 2040*				Alternative 1 – 2040*				Alternative 2 – 2040*				Alternative 3 – 2040*			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Branch Connector	Volume	V/C	Volume	V/C	Volume	D/C	Volume	D/C	Volume	D/C	Volume	D/C	Volume	D/C	Volume	D/C	Volume	D/C	Volume	D/C
I-605 SB to I-405 NB	848	0.47	1,096	0.61	990	0.55	1,210	0.67	870	0.48	1,080	0.60	850	0.47	1,040	0.58	860	0.48	1,080	0.60
I-605 SB/7th Street to I-405 NB	1,555	0.43	1,864	0.52	1,820	0.51	1,750	0.49	1,670	0.46	1,600	0.44	1,630	0.45	1,550	0.43	1,570	0.44	1,550	0.43
I-405 SB to I-605 NB	1,376	0.38	1,305	0.36	1,520	0.42	1,360	0.38	1,390	0.39	1,560	0.43	1,350	0.38	1,060	0.29	1,410	0.39	1,220	0.34
I-605 SB/I-405 SB to 7th Street	1,460	**0.81**	622	0.35	2,200	**1.22**	1,470	0.82	2,150	**1.19**	1,120	0.62	2,050	**1.14**	1,040	0.58	2,020	**1.12**	1,930	1.07
7th Street to I-605 NB/I-405 NB	1,100	**0.31**	1,300	0.36	1,310	0.36	1,430	0.40	1,200	0.33	1,330	0.37	510	0.14	380	**0.11**	1,450	0.40	1,260	0.35
7th Street to I-405 NB	707	0.39	768	0.43	830	0.46	480	**0.27**	810	0.45	470	**0.26**	780	0.43	460	0.26	770	0.43	460	**0.26**

V/C – Volume-to-Capacity Ratio based on branch connector capacity of 1,800 vehicles per lane for GP branch connector lanes.
D/C – Demand Volume-to-Capacity Ratio based on branch connector capacity of 1,800 vehicles per lane for GP branch connector lanes.
Bolded V/C and D/C ratios indicate the minimum and maximum values as discussed in the text.
* – For future conditions, the D/C ratio is used instead of the V/C ratio.

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Table 3.1.6-12 shows that the study intersections are anticipated to operate under capacity (i.e., v/c less than or equal to 1.00) in 2020 under no-build conditions during peak hours, except for five intersections that are anticipated to operate over capacity during either the AM or PM peak hour or both.

A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2040 no-build conditions is provided in Table 3.1.6-12 for all of the study intersections. In Table 3.1.6-12 for 2040 under no-build conditions, the study intersections are anticipated to operate at LOS D or better, except for nine intersections (as shown in bold) that are anticipated to operate at LOS E or F during either the AM or PM peak hour or both.

Table 3.1.6-12 shows that the study intersections are anticipated to operate under capacity (i.e., v/c less than or equal to 1.00) in 2040 under no-build conditions during peak hours, except for 10 intersections that are anticipated to operate over capacity during either the AM or PM peak hour or both.

A comparison of vehicle queuing (higher of AM or PM peak-hour 95th percentile queues) in year 2040 with available storage (in feet) was conducted at all arterial interchange study intersections and is summarized in Table 3.1.6-16. Table 3.1.6-16 shows that 90 percent of off-ramps with traffic control at their arterial intersections are anticipated to have adequate turning lane storage under no-build conditions in 2040. Table 3.1.6-16 also shows that 64 percent of arterials are anticipated to have adequate turning lane storage at ramp intersections, and 45 percent of turning lanes at arterial/arterial intersections are anticipated to have adequate storage under no-build conditions in 2040.

Alternative 1

Freeway Mainline. The Opening Year (2020) and Design Year (2040) Alternative 1 AM/PM peak-hour traffic volumes for the freeway mainline and all interchange ramps within the study area in Los Angeles County are presented in Figures 3.1.6-19 and 3.1.6-23, respectively. The freeway mainline and all interchange ramps are assumed to be unchanged from the existing conditions.

V/C Ratio and LOS. Table 3.1.6-13 presents the LOS and v/c ratios for peak hours of Alternative 1 in 2020 for the GP lanes of the freeway mainline. Under Alternative 1 in year 2020, the I-405 freeway mainline between I-605 and Lakewood Boulevard is anticipated to operate at LOS F in the AM peak hour in the northbound direction and LOS D and F in the southbound direction. In the PM peak hour, the I-405 freeway mainline is anticipated to operate at LOS F in the northbound direction and LOS E and F in the southbound direction. The range of v/c ratios in the GP lanes of the I-405 freeway mainline during the AM peak hour is **0.92 to 1.19** and **0.98 to 1.40** during the PM peak hour.

The I-605 mainline is anticipated to operate at LOS D in the AM peak hour in the northbound direction and LOS E in the southbound direction in 2020. In the PM peak hour, the I-605 freeway mainline is anticipated to operate at LOS E in both directions. The v/c ratios in the GP lanes of the I-605 freeway mainline during the AM peak hour are **0.83** in the northbound direction and **1.07** in the southbound direction. During the PM peak hour, the v/c ratios are **1.01** in the northbound direction and **1.00** in the southbound direction.

The SR-22/7th Street freeway mainline is anticipated to operate at LOS F in the AM peak hour in the eastbound direction and LOS E in the westbound direction in 2020. In the PM peak hour, the SR-22/7th Street freeway mainline is LOS D in the eastbound direction and LOS E in the westbound direction. The v/c ratios in the GP lanes of the SR-22/7th Street freeway mainline during the AM peak hour are **1.19** in the eastbound direction and **1.15** in the westbound direction. During the PM peak hour, the v/c ratios are **0.98** in the eastbound direction and **1.09** in the westbound direction.

Table 3.1.6-14 presents the v/c ratios for peak hours of Alternative 1 in 2020 for the HOV (carpool) lanes. The range of v/c ratios in the HOV lanes during the AM peak hour is **1.00 to 1.30** and **1.02 to 1.31** during the PM peak hour (shown in bold in the table).

Table 3.1.6-24 presents the LOS and v/c ratios for peak hours of Alternative 1 in 2040 for the GP lanes of the freeway mainline. Under Alternative 1 conditions in year 2040, the freeway mainline between I-605 and Lakewood Boulevard is anticipated to operate at LOS F in the AM peak hour in the northbound direction and LOS E and F in the southbound direction. In the PM peak hour, the I-405 freeway mainline is anticipated to operate at LOS F in the northbound direction and LOS E and F in the southbound direction. The range of v/c ratios in the GP lanes of the I-405 freeway mainline during the AM peak hour is **0.99 to 1.29** and **1.06 to 1.52** during the PM peak hour.

The I-605 mainline is anticipated to operate at LOS D in the AM peak hour in the northbound direction and LOS F in the southbound direction in 2040. In the PM peak hour, the I-605 freeway mainline is anticipated to operate at LOS F in the northbound direction and LOS E in the southbound direction. The v/c ratios in the GP lanes of the I-605 freeway mainline during the AM peak hour are **0.90** in the northbound direction and **1.15** in the southbound direction. During the PM peak hour, the v/c ratios are **1.09** in the northbound direction and **1.08** in the southbound direction.

The SR-22/7th Street freeway mainline is anticipated to operate at LOS F in the eastbound direction and LOS E in the westbound direction during the AM peak hour in 2040. In the PM peak hour, the SR-22/7th Street freeway mainline is anticipated to operate at LOS D in the eastbound direction and LOS E in the westbound direction. The v/c ratios in the GP lanes of the

SR-22/7th Street freeway mainline during the AM peak hour are **1.19** in the eastbound direction and **1.15** in the westbound direction. During the PM peak hour, the v/c ratios are **0.98** in the eastbound direction and **1.09** in the westbound direction.

Table 3.1.6-25 presents the v/c ratios for peak hours of Alternative 1 in 2040 for the HOV (carpool) lanes. The range of v/c ratios in the HOV lanes during the AM peak hour is **1.08 to 1.41** and **1.10 to 1.42** during the PM peak hour.

A more-detailed link-by-link presentation of Alternative 1 traffic conditions in 2020 and 2040 for GP and HOV lanes is included in Appendix L2.

Freeway Connector Volumes. Tables 3.1.6-15 and 3.1.6-26 provide the 2020 and 2040 forecast for Alternative 1, respectively, of branch connector volumes and v/c ratios on ramps within the I-405/I-605/SR-22/ 7th Street interchange not presented above under the Orange County heading. Branch connectors are forecast to operate with v/c ratios ranging from **0.24 to 1.19** in 2020 and from **0.26 to 1.19** in 2040 under Alternative 1. The branch connector from I-605 southbound/ I-405 southbound to 7th Street is anticipated to operate with a v/c ratio in excess of 1.00 in 2040 during the AM peak hour.

In no instance would additional lanes on branch connectors be feasible. Ramp metering was considered as a means to improve connector operations, but it was not included in the project because it would further reduce the capacity of the branch connectors.

Arterials, Intersections, and Interchanges. Alternative 1 AM and PM peak-hour traffic volumes for arterial and interchange study locations within the study area in Los Angeles County for 2020 and 2040 are illustrated in Figures 3.1.6-27 and 3.1.6-31, respectively. A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2020 Alternative 1 conditions is provided in Table 3.1.6-12 for all of the study intersections. The Alternative 1 condition appears in Table 3.1.6-12 under the "Alternative 1 Traffic on No Build Geometry" heading, where forecast Alternative 1 traffic is evaluated on no-build lanes and traffic control. In 2020 under Alternative 1, the study intersections are anticipated to operate at LOS D or better, except for four intersections that are anticipated to operate at LOS E or F during either the AM or PM peak hour or both (shown in bold in the table); these same four intersections are anticipated to operate at LOS E or F under no-build conditions in 2020.

Table 3.1.6-12 shows that the study intersections are anticipated to operate under capacity (i.e., v/c less than or equal to 1.00) in 2020 under Alternative 1 during peak hours, except for six intersections that are anticipated to operate over capacity during either the AM or PM peak hour

or both. Five of these intersections are anticipated to operate over capacity under the no-build condition in 2020.

A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2040 Alternative 1 conditions is provided in Table 3.1.6-12 for all of the study intersections. In 2040 under Alternative 1, the study intersections are anticipated to operate at LOS D or better, except for 10 intersections that are anticipated to operate at LOS E or F during either the AM or PM peak hour or both (shown in bold in the table). Nine of these 10 intersections are anticipated to operate at LOS E or F under the no-build conditions in 2040.

Table 3.1.6-12 shows that the study intersections are anticipated to operate under capacity (i.e., v/c less than or equal to 1.00) in 2040 under Alternative 1 during peak hours, except for 10 intersections that are anticipated to operate over capacity during either the AM or PM peak hour or both. The same 10 intersections are anticipated to operate over capacity under the no-build condition in 2040.

As highlighted in Table 3.1.6-12, the project contributes to adverse cumulative effects on the following four study intersections in 2040:

Los Coyotes Diagonal and Bellflower Boulevard (2040 PM peak hour under No Build Alternative projected D/C ratio is 1.13 with LOS E and under Alternative 1 projected D/C ratio is 1.15 with LOS E)

SR-22 Westbound Ramp and College Park Drive (2040 PM peak hour under No Build Alternative projected D/C ratio is 1.16 with LOS F and under Alternative 1 projected D/C ratio is 1.19 with LOS F)

7th Street and Pacific Coast Highway (2040 AM peak hour under No Build Alternative projected D/C ratio is 1.02 with LOS E and under Alternative 1 projected D/C ratio is 1.04 with LOS E)7th Street and West Campus Drive (2040 PM peak hour under No Build Alternative projected D/C ratio is 0.87 with LOS E and under Alternative 1 projected D/C ratio is 0.89 with LOS E)

As highlighted in Table 3.1.6-12, the project contributes to adverse cumulative effects on the following two study intersections in 2020, the first of which also has an adverse cumulative effect in 2040 and the second of which does not:

SR-22 Westbound Ramp and College Park Drive (2020 PM peak hour under No Build Alternative projected D/C ratio is 1.07 with LOS F and under Alternative 1 projected D/C ratio is 1.10 with LOS F)

7th Street and Bellflower Boulevard (2020 AM peak hour under No Build Alternative projected D/C ratio is 1.04 with LOS E and under Alternative 1 projected D/C ratio is 1.06 with LOS E)

Measures to Lessen Traffic Impacts at Intersections. Traffic measures listed in Section 3.1.6.4, Avoidance, Minimization, and/or Mitigation Measures, are proposed to address the project contributions to adverse cumulative effects at the intersections identified above.

Table 3.1.6-27 provides a summary of the LOS analysis and v/c ratios for all of the study intersections during AM and PM peak hours anticipated in 2020 under Alternative 1 with all improvements, including the proposed traffic measures identified in Section 3.1.6.4, Avoidance, Minimization, and/or Mitigation Measures. LOS and v/c ratios with all improvements, including proposed traffic measures, appear in the table under the heading "Alternative 1 Traffic on Alternative 1 Geometry including Traffic Measures." Table 3.1.6-27 shows that, with all improvements including proposed traffic measures, Alternative 1 does not contribute to adverse cumulative effects on any study intersection in 2020.

Table 3.1.6-27 provides a summary of the LOS analysis and v/c ratios for all of the study intersections during AM and PM peak hours anticipated in 2040 under Alternative 1 with all improvements, including the measures identified in Section 3.1.6.4, Avoidance, Minimization, and/or Mitigation Measures. Table 3.1.6-27 shows that, with all improvements including proposed traffic measures, Alternative 1 does not contribute to adverse cumulative effects on any study intersection in 2040.

No additional ROW is anticipated to implement the proposed measures. Noise and air quality impacts of construction would be temporary and not anticipated to be an adverse effect. It is anticipated that all of the proposed measures could be implemented without the necessity of closing travel lanes during weekday peak hours. It may be necessary to narrow lanes. Short-term off-peak, nighttime, and weekend lane closures may be necessary. As noted in the traffic measures listed in Section 3.1.6.4, Avoidance, Minimization, and/or Mitigation Measures, the agencies implementing the measures would bear responsibility for necessary clearances and permits.

As stated in Section 3.1.6.4 (Measures T-10 and T-11), if the implementing agencies decide not to move forward with these improvements, cumulative impacts would remain adverse.

Alternative 2

Freeway Mainline. The Opening Year (2020) and Design Year (2040) Alternative 2 AM/PM peak-hour traffic volumes for the freeway mainline and all interchange ramps within the study area in

Los Angeles County are presented in Figures 3.1.6-20 and 3.1.6-24, respectively. The freeway mainline and all interchange ramps are assumed to be unchanged from the existing conditions.

V/C Ratio and LOS. Table 3.1.6-13 presents the LOS and v/c ratios for peak hours of Alternative 2 in 2020 for the GP lanes of the freeway mainline. Under Alternative 2 in year 2020, the I-405 freeway mainline between I-605 and Lakewood Boulevard is anticipated to operate at LOS F in the AM peak hour in the northbound direction and LOS D and F in the southbound direction. In the PM peak hour, the I-405 freeway mainline is anticipated to operate at LOS F in the northbound direction and LOS E and F in the southbound direction. The range of v/c ratios in the GP lanes of the I-405 freeway mainline during the AM peak hour is **0.92 to 1.20** and **0.99 to 1.37** during the PM peak hour.

The I-605 mainline is anticipated to operate at LOS C in the AM peak hour in the northbound direction and LOS E in the southbound direction in 2020. In the PM peak hour, the I-605 freeway mainline is anticipated to operate at LOS D in the northbound direction and LOS E in the southbound direction. The v/c ratios in the GP lanes of the I-605 freeway mainline during the AM peak hour are **0.75** in the northbound direction and **1.08** in the southbound direction. During the PM peak hour, the v/c ratios are **0.88** in the northbound direction and **1.00** in the southbound direction.

The SR-22/7th Street freeway mainline is anticipated to operate at LOS F in the AM peak hour in the eastbound direction and LOS E in the westbound direction in 2020. In the PM peak hour, the SR-22/7th Street freeway mainline is LOS D in the eastbound direction and LOS E in the westbound direction. The v/c ratios in the GP lanes of the SR-22/7th Street freeway mainline during the AM peak hour are **1.18** in the eastbound direction and **1.14** in the westbound direction. During the PM peak hour, the v/c ratios are **0.95** in the eastbound direction and **1.11** in the westbound direction.

Table 3.1.6-14 presents the v/c ratios for peak hours of Alternative 2 in 2020 for the HOV (carpool) lanes. The range of v/c ratios in the HOV lanes during the AM peak hour is **1.00 to 1.24** and **1.08 to 1.46** during the PM peak hour.

Table 3.1.6-24 presents the LOS and v/c ratios for peak hours of Alternative 2 in 2040 for the GP lanes of the freeway mainline. Under Alternative 2 conditions in year 2040, the freeway mainline between I-605 and Lakewood Boulevard is anticipated to operate at LOS F in the AM peak hour in the northbound direction and LOS E and F in the southbound direction. In the PM peak hour, the I-405 freeway mainline is anticipated to operate at LOS F in the northbound direction and LOS E and F in the southbound direction. The range of v/c ratios in the GP lanes of the I-405 freeway mainline during the AM peak hour is **1.02 to 1.29** and **1.07 to 1.48** during the PM peak hour.

Table 3.1.6-27: Years 2020 and 2040 Peak-Hour Intersections LOS and Adverse Effect Determination after Traffic Measures for Alternative 1 – Locations in Los Angeles County

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2009						Year 2020												No Build-Alternative 1 Adverse Effect	Year 2040												No Build-Alternative 1 Adverse Effect
					Existing Traffic						No Build Traffic on No Build Geometry						Alternative 1 Traffic on Alternative 1 Geometry including Traffic Measures							No Build Traffic on No Build Geometry						Alternative 1 Traffic on Alternative 1 Geometry including Traffic Measures						
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
		East/West Street	North/South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	
Carson Street at I-605	1	Carson Street	I-605 SB Off-Ramp	Sig	0.58	21.9	C	0.61	17.8	B	0.57	22.3	C	0.68	23.8	C	0.56	18.7	B	0.67	20.1	C	N	0.62	22.4	C	0.73	24.5	C	0.61	18.8	B	0.73	20.8	C	N
	2	Carson Street	I-605 SB Direct On-Ramp	None	0.15	--	--	0.25	--	--	0.22	--	--	0.33	--	--	0.24	--	--	0.38	--	--	--	0.24	--	--	0.36	--	--	0.26	--	--	0.41	--	--	--
		Carson Street	I-605 SB Loop On-Ramp	None	0.24	--	--	0.20	--	--	0.33	--	--	0.33	--	--	0.35	--	--	0.36	--	--	--	0.35	--	--	0.36	--	--	0.38	--	--	0.39	--	--	--
	3	Carson Street	I-605 NB Off-Ramp	Sig	0.55	14.8	B	0.66	12.4	B	0.59	21.8	C	0.76	20.6	C	0.59	20.3	C	0.76	16.6	B	N	0.63	23.6	C	0.82	23.2	C	0.63	21.8	C	0.82	18.4	B	N
		Carson Street	I-605 NB Loop On-Ramp	None	0.23	--	--	0.45	--	--	0.31	--	--	0.35	--	--	0.30	--	--	0.35	--	--	--	0.33	--	--	0.37	--	--	0.33	--	--	0.37	--	--	--
		Carson Street	I-605 NB Direct On-Ramp	None	0.40	--	--	0.32	--	--	0.52	--	--	0.49	--	--	0.51	--	--	0.46	--	--	--	0.56	--	--	0.53	--	--	0.55	--	--	0.49	--	--	--
	4	Carson Street	Pioneer Boulevard	Sig	0.76	48.1	D	0.76	35.1	D	0.79	31.1	C	0.84	33.7	C	0.79	30.7	C	0.87	31.6	C	N	0.86	35.1	D	0.92	43.9	D	0.87	34.7	C	0.90	41.4	D	N
Spring Street/ Cerritos Avenue at I-605	5	Spring Street/Cerritos Avenue	I-605 SB Off-Ramp	Sig	0.79	26.2	C	0.60	18.4	B	0.68	14.2	B	0.65	10.9	B	0.68	14.0	B	0.64	10.3	B	N	0.74	15.4	B	0.71	12.0	B	0.73	15.2	B	0.70	11.4	B	N
	6	Spring Street/Cerritos Avenue	I-605 NB On-Ramp	Sig	0.84	13.5	B	0.81	11.1	B	0.76	10.5	B	0.79	8.2	A	0.73	9.3	A	0.78	8.1	A	N	0.82	11.6	B	0.86	9.8	A	0.79	10.3	B	0.85	9.5	A	N
Lakewood Boulevard/ Willow Street at I-405	7	I-405 NB Direct Off-Ramp	Lakewood Boulevard	None	0.35	--	--	0.34	--	--	0.38	--	--	0.38	--	--	0.43	--	--	0.41	--	--	--	0.41	--	--	0.41	--	--	0.47	--	--	0.44	--	--	--
		I-405 NB Direct On-Ramp	Lakewood Boulevard	None	0.22	--	--	0.21	--	--	0.38	--	--	0.23	--	--	0.38	--	--	0.22	--	--	--	0.41	--	--	0.25	--	--	0.41	--	--	0.24	--	--	--
		I-405 NB Loop Off-Ramp	Lakewood Boulevard	None	0.19	--	--	0.18	--	--	0.23	--	--	0.22	--	--	0.26	--	--	0.22	--	--	--	0.25	--	--	0.23	--	--	0.28	--	--	0.24	--	--	--
		I-405 NB Loop On-Ramp	Lakewood Boulevard	None	0.50	--	--	0.38	--	--	0.53	--	--	0.41	--	--	0.53	--	--	0.41	--	--	--	0.57	--	--	0.44	--	--	0.57	--	--	0.44	--	--	--
	8	I-405 SB Loop On-Ramp	Lakewood Boulevard	None	0.19	--	--	0.23	--	--	0.22	--	--	0.25	--	--	0.23	--	--	0.25	--	--	--	0.24	--	--	0.27	--	--	0.25	--	--	0.27	--	--	--
		I-405 SB Direct Off-Ramp	Lakewood Boulevard	None	0.40	--	--	0.31	--	--	0.43	--	--	0.48	--	--	0.41	--	--	0.46	--	--	--	0.46	--	--	0.52	--	--	0.44	--	--	0.50	--	--	--
	9	Willow Street	Lakewood Boulevard	Sig	0.76	31.1	C	**0.92**	**66.2**	**E**	0.75	31.2	C	0.89	43.0	D	0.74	28.9	C	0.96	46.5	D	N	0.81	33.6	C	0.93	48.4	D	0.79	33.1	C	0.93	48.7	D	N
	10	Willow Street	I-405 SB Loop Off-Ramp	None	0.32	--	--	0.30	--	--	0.35	--	--	0.46	--	--	0.33	--	--	0.45	--	--	--	0.37	--	--	0.50	--	--	0.36	--	--	0.48	--	--	--
		Willow Street	I-405 SB Direct On-Ramp	None	0.26	--	--	0.38	--	--	0.28	--	--	0.41	--	--	0.28	--	--	0.41	--	--	--	0.31	--	--	0.44	--	--	0.31	--	--	0.44	--	--	--
Bellflower Boulevard/ Los Coyotes Diagonal at I-405	11	I-405 NB Off-Ramp	Bellflower Boulevard	Sig	0.41	9.3	A	0.48	11.9	B	0.51	10.8	B	0.53	10.6	B	0.51	10.4	B	0.53	10.9	B	N	0.55	11.6	B	0.58	11.3	B	0.55	11.3	B	0.58	11.3	B	N
		I-405 NB Loop On-Ramp	Bellflower Boulevard	None	0.49	--	--	0.35	--	--	0.53	--	--	0.37	--	--	0.51	--	--	0.37	--	--	--	0.57	--	--	0.40	--	--	0.55	--	--	0.40	--	--	--
		I-405 NB Direct On-Ramp	Bellflower Boulevard	None	0.28	--	--	0.18	--	--	0.31	--	--	0.19	--	--	0.29	--	--	0.19	--	--	--	0.33	--	--	0.20	--	--	0.32	--	--	0.20	--	--	--
	12	Willow Street	Bellflower Boulevard	Sig	**0.84**	**81.2**	**F**	0.92	40.1	D	1.01	48.8	D	1.01	54.4	D	1.00	50.1	D	1.00	51.2	D	N	**1.09**	**67.3**	**E**	**1.09**	**70.6**	**E**	**1.09**	**68.2**	**E**	**1.10**	**68.1**	**E**	N
	13	Los Coyotes Diagonal	Bellflower Boulevard	Sig	0.63	31.3	C	**0.97**	**72.8**	**E**	0.65	26.4	C	1.00	42.1	D	0.64	27.5	C	1.06	44.6	D	N	0.70	26.9	C	**1.13**	**56.8**	**E**	0.71	25.7	C	1.14	53.7	D	N
		Los Coyotes Diagonal	I-405 SB Direct On-Ramp	None	0.06	--	--	0.09	--	--	0.06	--	--	0.12	--	--	0.08	--	--	0.12	--	--	--	0.07	--	--	0.13	--	--	0.08	--	--	0.13	--	--	--
	14	I-405 SB Loop Off-Ramp	Bellflower Boulevard	None	0.12	--	--	0.26	--	--	0.12	--	--	0.32	--	--	0.12	--	--	0.29	--	--	--	0.13	--	--	0.34	--	--	0.13	--	--	0.32	--	--	--
	15	Los Coyotes Diagonal	I-405 SB Direct Off-Ramp	Sig	0.44	14.4	B	0.45	13.4	B	0.52	10.0	B	0.47	16.0	B	0.52	10.3	B	0.47	14.0	B	N	0.56	10.6	B	0.51	16.8	B	0.56	10.8	B	0.51	14.7	B	N
		Los Coyotes Diagonal	I-405 SB Loop On-Ramp	None	0.14	--	--	0.13	--	--	0.16	--	--	0.17	--	--	0.25	--	--	0.17	--	--	--	0.18	--	--	0.18	--	--	0.27	--	--	0.18	--	--	--
	16	Willow Street	Los Coyotes Diagonal	Sig	0.72	51.5	D	**0.74**	**102.8**	**F**	0.78	44.4	D	1.02	35.1	D	0.77	31.7	C	1.04	36.7	D	N	0.87	48.8	D	1.18	45.4	D	0.86	36.4	D	1.20	50.4	D	N
Woodruff Avenue at I-405	17	Willow Street	Woodruff Avenue	Sig	**1.07**	**86.8**	**F**	0.77	30.4	C	**1.33**	**147.9**	**F**	0.87	40.4	D	**1.32**	**146.2**	**F**	0.88	40.9	D	N	**1.44**	**180.5**	**F**	0.94	51.5	D	**1.43**	**179.2**	**F**	0.94	53.1	D	N
	18	I-405 NB Direct Off-Ramp	Woodruff Avenue	None	0.15	--	--	0.17	--	--	0.39	--	--	0.19	--	--	0.39	--	--	0.20	--	--	--	0.42	--	--	0.20	--	--	0.43	--	--	0.22	--	--	--
		I-405 NB Direct On-Ramp	Woodruff Avenue	None	0.25	--	--	0.20	--	--	0.31	--	--	0.21	--	--	0.31	--	--	0.21	--	--	--	0.34	--	--	0.23	--	--	0.34	--	--	0.23	--	--	--
	19	I-405 SB Direct Off-Ramp	Woodruff Avenue	None	0.48	--	--	0.38	--	--	0.52	--	--	0.47	--	--	0.51	--	--	0.45	--	--	--	0.56	--	--	0.51	--	--	0.55	--	--	0.49	--	--	--
		I-405 SB Direct On-Ramp	Woodruff Avenue	None	0.27	--	--	0.19	--	--	0.41	--	--	0.23	--	--	0.43	--	--	0.23	--	--	--	0.45	--	--	0.25	--	--	0.47	--	--	0.25	--	--	--
Palo Verde Avenue / Stearns Street at I-405	20	I-405 NB Direct Off-Ramp	Palo Verde Avenue	Sig	0.54	11.3	B	0.45	13.7	B	0.78	17.7	B	0.61	11.8	B	0.78	17.0	B	0.63	12.0	B	N	0.95	21.2	C	0.70	12.6	B	0.96	20.6	C	0.73	13.1	B	N
		I-405 NB Loop On-Ramp	Palo Verde Avenue	None	0.11	--	--	0.20	--	--	0.13	--	--	0.22	--	--	0.15	--	--	0.20	--	--	--	0.14	--	--	0.23	--	--	0.17	--	--	0.21	--	--	--
	21	Woodruff Avenue	Palo Verde Avenue	Sig	**0.87**	**86.6**	**F**	0.59	21.3	C	0.84	13.6	B	0.66	10.3	B	0.84	12.9	B	0.68	10.2	B	N	0.91	15.9	B	0.72	11.3	B	0.91	15.4	B	0.74	11.2	B	N
	22	Stearns Street	Palo Verde Avenue	Sig	0.73	19.4	B	0.75	25.2	C	0.86	18.9	B	0.83	20.5	C	0.86	18.5	B	0.85	21.0	C	N	0.94	22.0	C	0.92	24.4	C	0.94	21.7	C	0.93	25.1	C	N
	23	Stearns Street	I-405 SB Direct On-Ramp	None	0.28	--	--	0.39	--	--	0.30	--	--	0.46	--	--	0.33	--	--	0.44	--	--	--	0.33	--	--	0.50	--	--	0.35	--	--	0.48	--	--	--

Table 3.1.6-27: Years 2020 and 2040 Peak-Hour Intersections LOS and Adverse Effect Determination after Traffic Measures for Alternative 1 – Locations in Los Angeles County

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2009						Year 2020												No Build-Alternative 1 Adverse Effect	Year 2040												No Build-Alternative 1 Adverse Effect
					Existing Traffic						No Build Traffic on No Build Geometry						Alternative 1 Traffic on Alternative 1 Geometry including Traffic Measures							No Build Traffic on No Build Geometry						Alternative 1 Traffic on Alternative 1 Geometry including Traffic Measures						
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
		East/West Street	North/South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	
Studebaker Road at I-405	24	I-405 NB Direct On-Ramp	Studebaker Road	Sig	0.50	4.0	A	0.55	4.3	A	0.51	2.6	A	0.47	4.7	A	0.51	1.2	A	0.50	3.1	A	N	0.55	2.8	A	0.51	4.9	A	0.55	1.4	A	0.54	3.2	A	N
	25	I-405 SB Direct Off-Ramp	Studebaker Road	Stop	0.15	13.8	B	0.04	10.8	B	**0.86**	**68.4**	**F**	0.34	16.2	C	**1.03**	**113.3**	**F**	0.51	24.8	C	N	**1.02**	**98.3**	**F**	0.33	15.7	C	**1.24**	**170.6**	**F**	0.53	25.2	D	N
				*Sig**	*N/A*						*0.65*	*8.4*	*A*	*0.66*	*5.8*	*A*	*0.66*	*8.9*	*A*	*0.65*	*6.2*	*A*		*0.71*	*9.1*	*A*	*0.72*	*7.0*	*A*	*0.72*	*9.8*	*A*	*0.72*	*7.1*	*A*	
	26	Atherton Street	Studebaker Road	Sig	0.46	9.2	A	0.74	23.3	C	0.54	9.3	A	0.78	13.8	B	0.54	10.3	B	0.79	14.8	B	N	0.60	10.7	B	0.85	15.7	B	0.58	11.1	B	0.86	16.9	B	N
Studebaker Road at SR-22/ 7th Street	27	SR-22 WB On-/Off-Ramp	Studebaker Road	Sig	0.49	16.0	B	0.74	22.1	C	0.46	12.8	B	0.79	28.0	C	0.53	13.0	B	0.76	27.3	C	N	0.50	13.1	B	0.86	30.4	C	0.52	13.5	B	0.82	29.1	C	N
	28	SR-22 EB On-/Off-Ramp	Studebaker Road	Sig	0.72	17.6	B	0.82	17.1	B	0.91	21.3	C	0.93	25.8	C	0.97	28.9	C	0.96	28.6	C	N	0.99	30.4	C	1.03	37.1	D	1.05	43.5	D	1.06	40.4	D	N
	29	SR-22 WB On-/Off-Ramp	College Park Drive	Stop	0.39	18.8	C	**0.65**	**59.9**	**F**			N/A						N/A				N			N/A						N/A				N
				Sig*	N/A						0.65	14.1	B	**1.07**	**110.1**	**F**	0.43	10.6	B	0.69	10.8	B		0.71	15.5	B	**1.16**	**147.2**	**F**	0.47	11.2	B	0.67	20.2	C	
7th Street	30	7th Street	Pacific Coast Highway	Sig	**0.95**	**92.9**	**F**	**1.03**	**82.6**	**F**	0.94	49.2	D	0.95	35.9	D	0.96	36.7	D	0.95	38.7	D	N	**1.02**	**65.8**	**E**	**1.03**	**58.7**	**E**	1.09	54.9	D	1.00	52.3	D	N
	31	7th Street	Bellflower Boulevard	Sig	**1.01**	**73.6**	**E**	**0.91**	**90.3**	**F**	**1.04**	**68.9**	**E**	0.98	47.9	D	0.90	31.3	C	0.80	33.7	C	N	**1.13**	**82.4**	**F**	**1.06**	**63.0**	**E**	0.98	37.5	D	0.91	33.0	C	N
	32	Pacific Coast Highway	Bellflower Boulevard	Sig	0.47	22.3	C	0.73	22.5	C	0.53	38.8	D	0.70	20.4	C	0.52	33.5	C	0.56	30.5	C	N	0.57	39.1	D	0.82	32.1	C	0.56	35.4	D	0.61	31.1	C	N
	33	7th Street	Channel Drive	Sig	0.72	32.9	C	0.88	30.3	C	0.71	24.5	C	0.94	22.7	C	0.71	10.8	B	0.94	29.2	C	N	0.77	25.7	C	1.02	50.8	D	0.77	11.5	B	1.01	48.2	D	N
	34	7th Street	W. Campus Drive	Sig	**0.83**	**112.9**	**F**	0.72	31.1	C	0.79	31.2	C	0.81	32.0	C	0.74	18.3	B	0.77	24.5	C	N	0.85	53.1	D	**0.87**	**58.5**	**E**	0.80	15.4	B	0.83	39.2	D	N
	35	7th Street	E. Campus Drive	Sig	0.97	23.1	C	0.73	24.7	C	1.03	35.8	D	0.87	14.6	B	1.04	39.7	D	0.87	16.6	B	N	**1.12**	**55.8**	**E**	0.96	16.7	B	**1.13**	**60.6**	**E**	0.95	19.2	B	N
	36	7th Street	Park Avenue	Sig	0.68	12.2	B	0.74	15.7	B	0.69	14.8	B	0.81	19.2	B	0.76	14.4	B	0.83	20	B	N	0.82	17.1	B	0.86	23.7	C	0.82	16.4	B	0.87	24.8	C	N

Notes:

1. LOS – Level of Service; V/C – Volume-to- Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio; N/A – Not Applicable (see Note 2)
2. * = Intersection is not signalized under existing or No Build conditions.
   - At the I-405 SB Direct Off-Ramp intersection with Studebaker Road, the signalized row is included only to determine if there is an adverse effect at the intersection. If a stop-controlled intersection has an LOS E or F under future conditions, then the intersection is reanalyzed as a signalized intersection to identify any adverse effects, because stop-controlled analysis does not provide an overall intersection metric.
   - The proposed traffic measure includes installation of a signal at the SR-22 WB On-/Off-Ramp intersection with College Park Drive. To determine if the measure addresses the adverse effect, a comparison is made between the proposed signalized intersection and the no-build condition assuming a traffic signal. The traffic signal is assumed for the no-build condition because stop-controlled analysis does not provide an overall intersection metric to determine if the adverse effect at the intersection has been addressed.
3. Bold indicates an intersection forecast to operate at LOS E or F.
4. Shaded cells indicate an adverse effect.
5. -- = LOS and average delay are not calculated for intersections without traffic control. The adverse effect determination applies only to controlled intersections.
6. Intersection numbers correspond to the intersection numbers shown on the intersection traffic volumes figures.
7. For future conditions, the D/C ratio is used instead of the V/C ratio.

The I-605 mainline is anticipated to operate at LOS D in the AM peak hour in the northbound direction and LOS F in the southbound direction in 2040. In the PM peak hour, the I-605 freeway mainline is anticipated to operate at LOS D in the northbound direction and LOS E in the southbound direction. The v/c ratios in the GP lanes of the I-605 freeway mainline during the AM peak hour are **0.81** in the northbound direction and **1.17** in the southbound direction. During the PM peak hour, the v/c ratios are **0.95** in the northbound direction and **1.08** in the southbound direction.

The SR-22/7th Street freeway mainline is anticipated to operate at LOS F in the eastbound direction and LOS E in the westbound direction during the AM peak hour in 2040. In the PM peak hour, the SR-22/7th Street freeway mainline is anticipated to operate at LOS D in the eastbound direction and LOS E in the westbound direction. The v/c ratios in the GP lanes of the SR-22/7th Street freeway mainline during the AM peak hour are **1.18** in the eastbound direction and **1.14** in the westbound direction. During the PM peak hour, the v/c ratios are **0.95** in the eastbound direction and **1.11** in the westbound direction.

Table 3.1.6-25 presents the v/c ratios for peak hours of Alternative 2 in 2040 for the HOV (carpool) lanes. The range of v/c ratios in the HOV lanes during the AM peak hour is **1.08 to 1.35** and **1.17 to 1.58** during the PM peak hour.

A more-detailed link-by-link presentation of Alternative 2 traffic conditions in 2020 and 2040 for GP and HOV lanes is included in Appendix L2.

Freeway Connector Volumes. Tables 3.1.6-15 and 3.1.6-26 provide the 2020 and 2040 forecast for Alternative 2, respectively, of branch connector volumes and v/c ratios on ramps within the I-405/I-605/SR-22/ 7th Street interchange not presented above under the Orange County heading. Branch connectors are forecast to operate with v/c ratios ranging from **0.23 to 1.14** in 2020 and from **0.11 to 1.14** in 2040 under Alternative 2. The branch connector from I-605 southbound/ I-405 southbound to 7th Street is anticipated to operate with a v/c ratio in excess of **1.00** in 2040 during the AM peak hour.

In no instance would additional lanes on branch connectors be feasible. Ramp metering was considered as a means to improve connector operations, but it was not included in the project because it would further reduce the capacity of the branch connectors.

Arterials, Intersections, and Interchanges. Alternative 2 AM and PM peak-hour traffic volumes for arterial and interchange study locations within the study area in Los Angeles County for 2020 and 2040 are illustrated in Figures 3.1.6-28 and 3.1.6-32, respectively. A summary of the LOS

analysis and v/c ratios for AM and PM peak hours for 2020 Alternative 2 conditions is provided in Table 3.1.6-28 for all of the study intersections. Alternative 2 conditions appear in Table 3.1.6-28 under the "Alternative 2 Traffic on No Build Geometry" heading, where forecast Alternative 2 traffic is evaluated on no-build lanes and traffic control. In Table 3.1.6-28 for 2020 under Alternative 2, the study intersections are anticipated to operate at LOS D or better, except for six intersections (as shown in bold) that are anticipated to operate at LOS E or F during either the AM or PM peak hour or both. These six intersections include the four intersections that are anticipated to operate at LOS E or F under no-build conditions in 2020.

Table 3.1.6-28 shows that the study intersections are anticipated to operate under capacity (i.e., v/c less than or equal to 1.00) in 2020 under Alternative 2 during peak hours, except for seven intersections that are anticipated to operate over capacity during either the AM or PM peak hour or both. These seven intersections include the five intersections that are anticipated to operate over capacity under the no-build condition in 2020.

A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2040 Alternative 2 conditions is provided in Table 3.1.6-28 for all of the study intersections. In Table 3.1.6-28 for 2040 under Alternative 2, the study intersections are anticipated to operate at LOS D or better, except for 10 intersections (as shown in bold) that are anticipated to operate at LOS E or F during either the AM or PM peak hour or both. Nine of these 10 intersections are anticipated to operate at LOS E or F under no-build conditions in 2040.

Table 3.1.6-28 shows that the study intersections are anticipated to operate under capacity (i.e., v/c less than or equal to 1.00) in 2040 under Alternative 2 during peak hours, except for 12 intersections that are anticipated to operate over capacity during either the AM or PM peak hour or both. These 12 intersections include the 10 intersections that are anticipated to operate over capacity under the no-build condition in 2040.

As highlighted in Table 3.1.6-28, the project contributes to adverse cumulative effects on the following nine study intersections under Alternative 2 in 2040:

Willow Street and Bellflower Boulevard (2040 PM peak hour under No Build Alternative projected D/C ratio is 1.09 with LOS E and under Alternative 2 projected D/C ratio is 1.25 with LOS F)

Willow Street and Los Coyotes Diagonal (2040 AM peak hour under No Build Alternative projected D/C ratio is 0.87 with LOS D and under Alternative 2 projected D/C ratio is 0.99 with LOS E; 2040 PM peak hour under No Build Alternative projected D/C ratio is 1.18 with LOS D, and under Alternative 2 projected D/C ratio is 1.41 with LOS F)

Table 3.1.6-28: Years 2020 and 2040 Peak-Hour Intersections LOS and Adverse Effect Determination for Alternative 2 – Locations in Los Angeles County

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2009						Year 2020														Year 2040											
					Existing Traffic						No Build Traffic on No Build Geometry						Alternative 2 Traffic on No Build Geometry						No Build-Alternative 2 Adverse Effect	No Build Traffic on No Build Geometry						Alternative 2 Traffic on No Build Geometry						No Build-Alternative 2 Adverse Effect
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
		East/West Street	North/South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	
Carson Street at I-605	1	Carson Street	I-605 SB Off-Ramp	Sig	0.58	21.9	C	0.61	17.8	B	0.57	22.3	C	0.68	23.8	C	0.58	19.1	B	0.67	20.3	C	N	0.62	22.4	C	0.73	24.5	C	0.63	19.3	B	0.73	21.0	C	N
	2	Carson Street	I-605 SB Direct On-Ramp	None	0.15	--	--	0.25	--	--	0.22	--	--	0.33	--	--	0.24	--	--	0.32	--	--	--	0.24	--	--	0.36	--	--	0.26	--	--	0.34	--	--	--
		Carson Street	I-605 SB Loop On-Ramp	None	0.24	--	--	0.20	--	--	0.33	--	--	0.33	--	--	0.37	--	--	0.36	--	--	--	0.35	--	--	0.36	--	--	0.40	--	--	0.39	--	--	--
	3	Carson Street	I-605 NB Off-Ramp	Sig	0.55	14.8	B	0.66	12.4	B	0.59	21.8	C	0.76	20.6	C	0.60	20.1	C	0.75	16.5	B	N	0.63	23.6	C	0.82	23.2	C	0.65	21.9	C	0.81	18.1	B	N
		Carson Street	I-605 NB Loop On-Ramp	None	0.23	--	--	0.45	--	--	0.31	--	--	0.35	--	--	0.33	--	--	0.36	--	--	--	0.33	--	--	0.37	--	--	0.35	--	--	0.39	--	--	--
		Carson Street	I-605 NB Direct On-Ramp	None	0.40	--	--	0.32	--	--	0.52	--	--	0.49	--	--	0.51	--	--	0.46	--	--	--	0.56	--	--	0.53	--	--	0.55	--	--	0.49	--	--	--
	4	Carson Street	Pioneer Boulevard	Sig	0.76	48.1	D	0.76	35.1	D	0.79	31.1	C	0.84	33.7	C	0.78	34.4	C	0.84	31.2	C	N	0.86	35.1	D	0.92	43.9	D	0.86	41.9	D	0.93	39.0	D	N
Spring Street/ Cerritos Avenue at I-605	5	Spring Street/Cerritos Avenue	I-605 SB Off-Ramp	Sig	0.79	26.2	C	0.60	18.4	B	0.68	14.2	B	0.65	10.9	B	0.68	14.5	B	0.57	9.8	A	N	0.74	15.4	B	0.71	12.0	B	0.74	15.7	B	0.62	10.8	B	N
	6	Spring Street/Cerritos Avenue	I-605 NB On-Ramp	Sig	0.84	13.5	B	0.81	11.1	B	0.76	10.5	B	0.79	8.2	A	0.69	7.9	A	0.74	7.7	A	N	0.82	11.6	B	0.86	9.8	A	0.75	8.7	A	0.81	8.6	A	N
Lakewood Boulevard/ Willow Street at I-405	7	I-405 NB Direct Off-Ramp	Lakewood Boulevard	None	0.35	--	--	0.34	--	--	0.38	--	--	0.38	--	--	0.42	--	--	0.42	--	--	--	0.41	--	--	0.41	--	--	0.46	--	--	0.45	--	--	--
		I-405 NB Direct On-Ramp	Lakewood Boulevard	None	0.22	--	--	0.21	--	--	0.38	--	--	0.23	--	--	0.39	--	--	0.20	--	--	--	0.41	--	--	0.25	--	--	0.43	--	--	0.21	--	--	--
		I-405 NB Loop Off-Ramp	Lakewood Boulevard	None	0.19	--	--	0.18	--	--	0.23	--	--	0.22	--	--	0.23	--	--	0.23	--	--	--	0.25	--	--	0.23	--	--	0.25	--	--	0.25	--	--	--
		I-405 NB Loop On-Ramp	Lakewood Boulevard	None	0.50	--	--	0.38	--	--	0.53	--	--	0.41	--	--	0.54	--	--	0.41	--	--	--	0.57	--	--	0.44	--	--	0.58	--	--	0.44	--	--	--
	8	I-405 SB Loop On-Ramp	Lakewood Boulevard	None	0.19	--	--	0.23	--	--	0.22	--	--	0.25	--	--	0.22	--	--	0.25	--	--	--	0.24	--	--	0.27	--	--	0.24	--	--	0.27	--	--	--
		I-405 SB Direct Off-Ramp	Lakewood Boulevard	None	0.40	--	--	0.31	--	--	0.43	--	--	0.48	--	--	0.42	--	--	0.47	--	--	--	0.46	--	--	0.52	--	--	0.45	--	--	0.51	--	--	--
	9	Willow Street	Lakewood Boulevard	Sig	0.76	31.1	C	**0.92**	**66.2**	**E**	0.75	31.2	C	0.89	43.0	D	0.75	28.3	C	0.90	44.3	D	N	0.81	33.6	C	0.93	48.4	D	0.79	32.2	C	1.02	52.0	D	N
	10	Willow Street	I-405 SB Loop Off-Ramp	None	0.32	--	--	0.30	--	--	0.35	--	--	0.46	--	--	0.33	--	--	0.45	--	--	--	0.37	--	--	0.50	--	--	0.36	--	--	0.49	--	--	--
		Willow Street	I-405 SB Direct On-Ramp	None	0.26	--	--	0.38	--	--	0.28	--	--	0.41	--	--	0.31	--	--	0.43	--	--	--	0.31	--	--	0.44	--	--	0.34	--	--	0.46	--	--	--
Bellflower Boulevard/ Los Coyotes Diagonal at I-405	11	I-405 NB Off-Ramp	Bellflower Boulevard	Sig	0.41	9.3	A	0.48	11.9	B	0.51	10.8	B	0.53	10.6	B	0.52	10.5	B	0.53	11.6	B	N	0.55	11.6	B	0.58	11.3	B	0.57	11.3	B	0.58	12.2	B	N
		I-405 NB Loop On-Ramp	Bellflower Boulevard	None	0.49	--	--	0.35	--	--	0.53	--	--	0.37	--	--	0.51	--	--	0.36	--	--	N	0.57	--	--	0.40	--	--	0.56	--	--	0.39	--	--	--
		I-405 NB Direct On-Ramp	Bellflower Boulevard	None	0.28	--	--	0.18	--	--	0.31	--	--	0.19	--	--	0.30	--	--	0.18	--	--	N	0.33	--	--	0.20	--	--	0.32	--	--	0.19	--	--	--
	12	Willow Street	Bellflower Boulevard	Sig	**0.84**	**81.2**	**F**	0.92	40.1	D	1.01	48.8	D	1.01	54.4	D	0.98	39.0	D	**1.16**	**78.7**	**E**	Y	**1.09**	**67.3**	**E**	**1.09**	**70.6**	**E**	1.05	55.0	D	**1.25**	**106.3**	**F**	Y
	13	Los Coyotes Diagonal	Bellflower Boulevard	Sig	0.63	31.3	C	**0.97**	**72.8**	**E**	0.65	26.4	C	1.00	42.1	D	0.62	27.4	C	1.03	41.2	D	N	0.70	26.9	C	**1.13**	**56.8**	**E**	0.67	27.7	C	1.13	54.2	D	N
		Los Coyotes Diagonal	I-405 SB Direct On-Ramp	None	0.06	--	--	0.09	--	--	0.06	--	--	0.12	--	--	0.08	--	--	0.14	--	--	--	0.07	--	--	0.13	--	--	0.08	--	--	0.15	--	--	--
	14	I-405 SB Loop Off-Ramp	Bellflower Boulevard	None	0.12	--	--	0.26	--	--	0.12	--	--	0.32	--	--	0.12	--	--	0.25	--	--	--	0.13	--	--	0.34	--	--	0.13	--	--	0.27	--	--	--
	15	Los Coyotes Diagonal	I-405 SB Direct Off-Ramp	Sig	0.44	14.4	B	0.45	13.4	B	0.52	10.0	B	0.47	16.0	B	0.52	10.4	B	0.48	14.1	B	N	0.56	10.6	B	0.51	16.8	B	0.56	11.0	B	0.52	14.8	B	N
		Los Coyotes Diagonal	I-405 SB Loop On-Ramp	None	0.14	--	--	0.13	--	--	0.16	--	--	0.17	--	--	0.31	--	--	0.20	--	--	--	0.18	--	--	0.18	--	--	0.33	--	--	0.21	--	--	--
	16	Willow Street	Los Coyotes Diagonal	Sig	0.72	51.5	D	**0.74**	**102.8**	**F**	0.78	44.4	D	1.02	35.1	D	0.88	54.7	D	**1.25**	**79.6**	**E**	Y	0.87	48.8	D	1.18	45.4	D	**0.99**	**60.7**	**E**	**1.41**	**101.4**	**F**	Y
Woodruff Avenue at I-405	17	Willow Street	Woodruff Avenue	Sig	**1.07**	**86.8**	**F**	0.77	30.4	C	**1.33**	**147.9**	**F**	0.87	40.4	D	**1.41**	**203.6**	**F**	0.88	54.3	D	Y	**1.44**	**180.5**	**F**	0.94	51.5	D	**1.53**	**242.2**	**F**	**0.95**	**81.3**	**F**	Y
	18	I-405 NB Direct Off-Ramp	Woodruff Avenue	None	0.15	--	--	0.17	--	--	0.39	--	--	0.19	--	--	0.44	--	--	0.23	--	--	--	0.42	--	--	0.20	--	--	0.47	--	--	0.25	--	--	--
		I-405 NB Direct On-Ramp	Woodruff Avenue	None	0.25	--	--	0.20	--	--	0.31	--	--	0.21	--	--	0.29	--	--	0.21	--	--	--	0.34	--	--	0.23	--	--	0.31	--	--	0.23	--	--	--
	19	I-405 SB Direct Off-Ramp	Woodruff Avenue	None	0.48	--	--	0.38	--	--	0.52	--	--	0.47	--	--	0.51	--	--	0.46	--	--	--	0.56	--	--	0.51	--	--	0.55	--	--	0.50	--	--	--
		I-405 SB Direct On-Ramp	Woodruff Avenue	None	0.27	--	--	0.19	--	--	0.41	--	--	0.23	--	--	0.44	--	--	0.26	--	--	--	0.45	--	--	0.25	--	--	0.47	--	--	0.28	--	--	--
Palo Verde Avenue / Stearns Street at I-405	20	I-405 NB Direct Off-Ramp	Palo Verde Avenue	Sig	0.54	11.3	B	0.45	13.7	B	0.78	17.7	B	0.61	11.8	B	0.69	15.3	B	0.59	11.8	B	N	0.95	21.2	C	0.70	12.6	B	0.82	17.4	B	0.72	13.3	B	N
		I-405 NB Loop On-Ramp	Palo Verde Avenue	None	0.11	--	--	0.20	--	--	0.13	--	--	0.22	--	--	0.10	--	--	0.19	--	--	--	0.14	--	--	0.23	--	--	0.11	--	--	0.20	--	--	--
	21	Woodruff Avenue	Palo Verde Avenue	Sig	**0.87**	**86.6**	**F**	0.59	21.3	C	0.84	13.6	B	0.66	10.3	B	0.82	13.8	B	0.70	11.3	B	N	0.91	15.9	B	0.72	11.3	B	0.89	15.9	B	0.76	12.1	B	N
	22	Stearns Street	Palo Verde Avenue	Sig	0.73	19.4	B	0.75	25.2	C	0.86	18.9	B	0.83	20.5	C	0.83	17.9	B	0.83	20.2	C	N	0.94	22.0	C	0.92	24.4	C	0.91	20.3	C	0.92	23.9	C	N
	23	Stearns Street	I-405 SB Direct On-Ramp	None	0.28	--	--	0.39	--	--	0.30	--	--	0.46	--	--	0.29	--	--	0.40	--	--	--	0.33	--	--	0.50	--	--	0.31	--	--	0.43	--	--	--

Table 3.1.6-28: Years 2020 and 2040 Peak-Hour Intersections LOS and Adverse Effect Determination for Alternative 2 – Locations in Los Angeles County

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2009						Year 2020												No Build-Alternative 2 Adverse Effect	Year 2040												No Build-Alternative 2 Adverse Effect
					Existing Traffic						No Build Traffic on No Build Geometry						Alternative 2 Traffic on No Build Geometry							No Build Traffic on No Build Geometry						Alternative 2 Traffic on No Build Geometry						
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
		East/West Street	North/South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	
Studebaker Road at I-405	24	I-405 NB Direct On-Ramp	Studebaker Road	Sig	0.50	4.0	A	0.55	4.3	A	0.51	2.6	A	0.47	4.7	A	0.54	3.3	A	0.52	2.7	A	N	0.55	2.8	A	0.51	4.9	A	0.58	3.6	A	0.56	2.8	A	N
	25	I-405 SB Direct Off-Ramp	Studebaker Road	Stop	0.15	13.8	B	0.04	10.8	B	**0.86**	**68.4**	**F**	0.34	16.2	C	**0.90**	**61.5**	**F**	0.61	31.4	D	N	**1.02**	**98.3**	**F**	0.33	15.7	C	**1.04**	**81.3**	**F**	0.65	33.1	D	N
				*Sig**	*N/A*						*0.65*	*8.4*	*A*	*0.66*	*5.8*	*A*	*0.65*	*8.9*	*A*	*0.65*	*6.1*	*A*		*0.71*	*9.1*	*A*	*0.72*	*7.0*	*A*	*0.71*	*9.7*	*A*	*0.72*	*7.0*	*A*	
	26	Atherton Street	Studebaker Road	Sig	0.46	9.2	A	0.74	23.3	C	0.54	9.3	A	0.78	13.8	B	0.59	8.5	A	0.79	15.0	B	N	0.60	10.7	B	0.85	15.7	B	0.65	9.5	A	0.86	17.1	B	N
Studebaker Road at SR-22/ 7th Street	27	SR-22 WB On-/Off-Ramp	Studebaker Road	Sig	0.49	16.0	B	0.74	22.1	C	0.46	12.8	B	0.79	28.0	C	0.49	13.0	B	0.83	28.9	C	N	0.50	13.1	B	0.86	30.4	C	0.54	13.4	B	0.89	31.8	C	N
	28	SR-22 EB On-/Off-Ramp	Studebaker Road	Sig	0.72	17.6	B	0.82	17.1	B	0.91	21.3	C	0.93	25.8	C	0.97	30.9	C	0.98	30.1	C	N	0.99	30.4	C	1.03	37.1	D	1.06	45.2	D	1.09	43.9	D	N
	29	SR-22 WB On-/Off-Ramp	College Park Drive	Stop	0.39	18.8	C	**0.65**	**59.9**	**F**	0.43	21.3	C	**0.61**	**88.7**	**F**	0.62	28.6	D	**1.14**	**172.9**	**F**	Y	0.51	25.3	D	**0.84**	**152.1**	**F**	**0.75**	**38.1**	**E**	**1.59**	**311.8**	**F**	Y
				*Sig**	*N/A*						*0.65*	*14.1*	*B*	***1.07****	***110.1***	***F****	*0.73*	*16.0*	*B*	***1.15****	***131.2***	***F****		*0.71*	*15.5*	*B*	***1.16****	***147.2***	***F****	*0.79*	*19.0*	*B*	***1.24****	***167.4***	***F****	
7th Street	30	7th Street	Pacific Coast Highway	Sig	**0.95**	**92.9**	**F**	**1.03**	**82.6**	**F**	0.94	49.2	D	0.95	35.9	D	0.96	51.2	D	0.99	39.9	D	N	**1.02**	**65.8**	**E**	**1.03**	**58.7**	**E**	**1.04**	**70.0**	**E**	**1.07**	**64.9**	**E**	Y
	31	7th Street	Bellflower Boulevard	Sig	**1.01**	**73.6**	**E**	**0.91**	**90.3**	**F**	**1.04**	**68.9**	**E**	0.98	47.9	D	**1.09**	**74.9**	**E**	0.98	46.3	D	Y	**1.13**	**82.4**	**F**	**1.06**	**63.0**	**E**	**1.18**	**92.7**	**F**	**1.06**	**60.9**	**E**	Y
	32	Pacific Coast Highway	Bellflower Boulevard	Sig	0.47	22.3	C	0.73	22.5	C	0.53	38.8	D	0.70	20.4	C	0.51	39.7	D	0.64	19.3	B	N	0.57	39.1	D	0.82	32.1	C	0.55	40.2	D	0.74	31.4	C	N
	33	7th Street	Channel Drive	Sig	0.72	32.9	C	0.88	30.3	C	0.71	24.5	C	0.94	22.7	C	0.73	24.0	C	0.96	24.8	C	N	0.77	25.7	C	1.02	50.8	D	0.79	25.4	C	**1.04**	**55.7**	**E**	Y
	34	7th Street	W. Campus Drive	Sig	**0.83**	**112.9**	**F**	0.72	31.1	C	0.79	31.2	C	0.81	32.0	C	0.82	45.2	D	0.83	41.7	D	N	0.85	53.1	D	**0.87**	**58.5**	**E**	**0.89**	**68.4**	**E**	**0.90**	**66.0**	**E**	Y
	35	7th Street	E. Campus Drive	Sig	0.97	23.1	C	0.73	24.7	C	1.03	35.8	D	0.87	14.6	B	1.07	46.4	D	0.90	16.1	B	N	**1.12**	**55.8**	**E**	0.96	16.7	B	**1.17**	**68.7**	**E**	0.99	19.0	B	Y
	36	7th Street	Park Avenue	Sig	0.68	12.2	B	0.74	15.7	B	0.69	14.8	B	0.81	19.2	B	0.71	15.8	B	0.81	19.2	B	N	0.82	17.1	B	0.86	23.7	C	0.77	18.0	B	0.86	23.4	C	N

Notes:

1. LOS – Level of Service; V/C – Volume-to- Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio; N/A – Not Applicable (see Note 2)
2. * = Intersection is not signalized under existing or No Build conditions. The signalized row is included only to determine if there is an adverse effect at the intersection. If a stop-controlled intersection has an LOS E or F under future conditions, then the intersection is reanalyzed as a signalized intersection to identify any adverse effects, because stop-controlled analysis does not provide an overall intersection metric. The number of LOS E or F locations and the number of locations with V/C or D/C greater than 1.00 identified in the text does not include the signalized row because the existing and no-build operation is based on the current stop control.
3. Bold indicates an intersection forecast to operate at LOS E or F.
4. Shaded cells indicate an adverse effect.
5. -- = LOS and average delay are not calculated for intersections without traffic control. The adverse effect determination applies only to controlled intersections.
6. Intersection numbers correspond to the intersection numbers shown on the intersection traffic volumes figures.
7. For future conditions, the D/C ratio is used instead of the V/C ratio.

Willow Street and Woodruff Avenue (2040 AM peak hour under No Build Alternative projected D/C ratio is 1.44 with LOS F and under Alternative 2 projected D/C ratio is 1.53 with LOS F)

SR-22 Westbound Ramp and College Park Drive (2040 PM peak hour under No Build Alternative projected D/C ratio is 1.16 with LOS F and under Alternative 2 projected D/C ratio is 1.24 with LOS F)

7th Street and Pacific Coast Highway (2040 AM peak hour under No Build Alterative projected D/C ratio is 1.02 with LOS E and under Alternative 2 projected D/C ratio is 1.04 with LOS E; 2040 PM peak hour under No Build Alternative projected D/C ratio is 1.03 with LOS E and under Alternative 2 projected D/C ratio is 1.07 with LOS E)

7th Street and Bellflower Boulevard (2040 AM peak hour under No Build Alternative projected D/C ratio is 1.13 with LOS F and under Alternative 2 projected D/C ratio is 1.18 with LOS F)

7th Street and Channel Drive (2040 PM peak hour under No Build Alternative projected D/C ratio is 1.02 with LOS D and under Alternative 2 projected D/C ratio is 1.04 with LOS E)

7th Street and West Campus Drive (2040 AM peak hour under No Build Alternative projected D/C ratio is 0.85 with LOS D and under Alternative 2 projected D/C ratio is 0.89 with LOS E; 2040 PM peak hour under No Build Alternative projected D/C ratio is 0.87 with LOS E and under Alternative 2 projected D/C ratio is 0.90 with LOS E)

7th Street and East Campus Drive (2040 AM peak hour under No Build Alternative projected D/C ratio is 1.12 with LOS E and under Alternative 2 projected D/C ratio is 1.17 with LOS E)

Table 3.1.6-28 shows that the project also contributes to adverse cumulative effects under Alternative 2 on the five study intersections listed below in 2020:

Willow Street and Bellflower Boulevard

Willow Street and Los Coyotes Diagonal

Willow Street and Woodruff Avenue

SR-22 Westbound Ramp and College Park Drive

7th Street and Bellflower Boulevard

Measures to Lessen Traffic Impacts at Intersections. Traffic measures listed in Section 3.1.6.4, Avoidance, Minimization, and/or Mitigation Measures, are proposed to address the project's contributions to adverse cumulative effects at the intersections identified above.

Table 3.1.6-29 provides a summary of the LOS analysis and v/c ratios for all of the study intersections during AM and PM peak hours anticipated in 2020 under Alternative 2 with all improvements, including the proposed traffic measures identified in Section 3.1.6.4, Avoidance,

Minimization, and/or Mitigation Measures. LOS and v/c ratios with all improvements, including proposed traffic measures, appear in the table under the heading "Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures." Table 3.1.6-29 shows that, with all improvements including proposed traffic measures, Alternative 2 does not contribute to adverse cumulative effects on any study intersection in 2020.

Table 3.1.6-29 provides a summary of the LOS analysis and v/c ratios for all of the study intersections during AM and PM peak hours anticipated in 2040 under Alternative 2 with all improvements, including the proposed traffic measures identified in Section 3.1.6.4, Avoidance, Minimization, and/or Mitigation Measures. Table 3.1.6-29 shows that, with all improvements including proposed traffic measures, Alternative 2 does not contribute to adverse cumulative effects on any study intersection in 2040.

No additional ROW is anticipated to implement the proposed measures. Noise and air quality impacts of construction would be temporary and not anticipated to be an adverse effect. It is anticipated that all of the proposed measures could be implemented without the necessity of closing travel lanes during weekday peak hours. It may be necessary to narrow lanes. Short-term off-peak, nighttime, and weekend lane closures may be necessary. As noted in the traffic measures listed in Section 3.1.6.4, Avoidance, Minimization, and/or Mitigation Measures, the agencies implementing the measures would bear responsibility for necessary clearances and permits.

As stated in Section 3.1.6.4 (Measures T-10 and T-11), if the implementing agencies decide not to move forward with these improvements, cumulative impacts would remain adverse. Alternative 3 (Preferred Alternative)

Freeway Mainline. The Opening Year (2020) and Design Year (2040) Alternative 3 AM/PM peak-hour traffic volumes for the freeway mainline and all interchange ramps within the study area in Los Angeles County are presented in Figures 3.1.6-21 and 3.1.6-25, respectively. The freeway mainline and all interchange ramps are assumed to be unchanged from the existing conditions.

V/C Ratio and LOS. Table 3.1.6-13 presents the LOS and v/c ratios for peak hours of Alternative 3 in 2020 for the GP lanes of the freeway mainline. Under Alternative 3 in year 2020, the freeway mainline between I-605 and Lakewood Boulevard is anticipated to operate at LOS F in the AM peak hour in the northbound direction and LOS D and F in the southbound direction. In the PM peak hour, the I-405 freeway mainline is anticipated to operate at LOS F in the northbound direction and LOS E and F in the southbound direction. The range of v/c ratios in the GP lanes of the I-405 freeway mainline during the AM peak hour is **0.95 to 1.23** and **1.02 to 1.42** during the PM peak hour.

Table 3.1.6-29: Years 2020 and 2040 Peak-Hour Intersections LOS and Adverse Effect Determination after Traffic Measures for Alternative 2 – Locations in Los Angeles County

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2009						Year 2020												Year 2040											
					Existing Traffic						No Build Traffic on No Build Geometry						Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures						No Build-Alternative 2 Adverse Effect	No Build Traffic on No Build Geometry						Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures						No Build-Alternative 2 Adverse Effect
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
		East/West Street	North/South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	
Carson Street at I-605	1	Carson Street	I-605 SB Off-Ramp	Sig	0.58	21.9	C	0.61	17.8	B	0.57	22.3	C	0.68	23.8	C	0.58	19.1	B	0.67	20.3	C	N	0.62	22.4	C	0.73	24.5	C	0.63	19.3	B	0.73	21.0	C	N
	2	Carson Street	I-605 SB Direct On-Ramp	None	0.15	--	--	0.25	--	--	0.22	--	--	0.33	--	--	0.24	--	--	0.32	--	--	--	0.24	--	--	0.36	--	--	0.26	--	--	0.34	--	--	--
		Carson Street	I-605 SB Loop On-Ramp	None	0.24	--	--	0.20	--	--	0.33	--	--	0.33	--	--	0.37	--	--	0.36	--	--	--	0.35	--	--	0.36	--	--	0.40	--	--	0.39	--	--	--
	3	Carson Street	I-605 NB Off-Ramp	Sig	0.55	14.8	B	0.66	12.4	B	0.59	21.8	C	0.76	20.6	C	0.60	20.1	C	0.75	16.5	B	N	0.63	23.6	C	0.82	23.2	C	0.65	21.9	C	0.81	18.1	B	N
		Carson Street	I-605 NB Loop On-Ramp	None	0.23	--	--	0.45	--	--	0.31	--	--	0.35	--	--	0.33	--	--	0.36	--	--	--	0.33	--	--	0.37	--	--	0.35	--	--	0.39	--	--	--
		Carson Street	I-605 NB Direct On-Ramp	None	0.40	--	--	0.32	--	--	0.52	--	--	0.49	--	--	0.51	--	--	0.46	--	--	--	0.56	--	--	0.53	--	--	0.55	--	--	0.49	--	--	--
	4	Carson Street	Pioneer Boulevard	Sig	0.76	48.1	D	0.76	35.1	D	0.79	31.1	C	0.84	33.7	C	0.78	34.4	C	0.84	31.2	C	N	0.86	35.1	D	0.92	43.9	D	0.86	41.9	D	0.93	39.0	D	N
Spring Street/ Cerritos Avenue at I-605	5	Spring Street/Cerritos Avenue	I-605 SB Off-Ramp	Sig	0.79	26.2	C	0.60	18.4	B	0.68	14.2	B	0.65	10.9	B	0.68	14.5	B	0.57	9.8	A	N	0.74	15.4	B	0.71	12.0	B	0.74	15.7	B	0.62	10.8	B	N
	6	Spring Street/Cerritos Avenue	I-605 NB On-Ramp	Sig	0.84	13.5	B	0.81	11.1	B	0.76	10.5	B	0.79	8.2	A	0.69	7.9	A	0.74	7.7	A	N	0.82	11.6	B	0.86	9.8	A	0.75	8.7	A	0.81	8.6	A	N
Lakewood Boulevard/ Willow Street at I-405	7	I-405 NB Direct Off-Ramp	Lakewood Boulevard	None	0.35	--	--	0.34	--	--	0.38	--	--	0.38	--	--	0.42	--	--	0.42	--	--	--	0.41	--	--	0.41	--	--	0.46	--	--	0.45	--	--	--
		I-405 NB Direct On-Ramp	Lakewood Boulevard	None	0.22	--	--	0.21	--	--	0.38	--	--	0.23	--	--	0.39	--	--	0.20	--	--	--	0.41	--	--	0.25	--	--	0.43	--	--	0.21	--	--	--
		I-405 NB Loop Off-Ramp	Lakewood Boulevard	None	0.19	--	--	0.18	--	--	0.23	--	--	0.22	--	--	0.23	--	--	0.23	--	--	--	0.25	--	--	0.23	--	--	0.25	--	--	0.25	--	--	--
		I-405 NB Loop On-Ramp	Lakewood Boulevard	None	0.50	--	--	0.38	--	--	0.53	--	--	0.41	--	--	0.54	--	--	0.41	--	--	--	0.57	--	--	0.44	--	--	0.58	--	--	0.44	--	--	--
	8	I-405 SB Loop On-Ramp	Lakewood Boulevard	None	0.19	--	--	0.23	--	--	0.22	--	--	0.25	--	--	0.22	--	--	0.25	--	--	--	0.24	--	--	0.27	--	--	0.24	--	--	0.27	--	--	--
		I-405 SB Direct Off-Ramp	Lakewood Boulevard	None	0.40	--	--	0.31	--	--	0.43	--	--	0.48	--	--	0.42	--	--	0.47	--	--	--	0.46	--	--	0.52	--	--	0.45	--	--	0.51	--	--	--
	9	Willow Street	Lakewood Boulevard	Sig	0.76	31.1	C	**0.92**	**66.2**	**E**	0.75	31.2	C	0.89	43.0	D	0.75	28.3	C	0.90	44.3	D	N	0.81	33.6	C	0.93	48.4	D	0.79	32.2	C	1.02	52.0	D	N
	10	Willow Street	I-405 SB Loop Off-Ramp	None	0.32	--	--	0.30	--	--	0.35	--	--	0.46	--	--	0.33	--	--	0.45	--	--	--	0.37	--	--	0.50	--	--	0.36	--	--	0.49	--	--	--
		Willow Street	I-405 SB Direct On-Ramp	None	0.26	--	--	0.38	--	--	0.28	--	--	0.41	--	--	0.31	--	--	0.43	--	--	--	0.31	--	--	0.44	--	--	0.34	--	--	0.46	--	--	--
Bellflower Boulevard/ Los Coyotes Diagonal at I-405	11	I-405 NB Off-Ramp	Bellflower Boulevard	Sig	0.41	9.3	A	0.48	11.9	B	0.51	10.8	B	0.53	10.6	B	0.52	10.5	B	0.53	11.6	B	N	0.55	11.6	B	0.58	11.3	B	0.57	11.3	B	0.58	12.2	B	N
		I-405 NB Loop On-Ramp	Bellflower Boulevard	None	0.49	--	--	0.35	--	--	0.53	--	--	0.37	--	--	0.51	--	--	0.36	--	--	N	0.57	--	--	0.40	--	--	0.56	--	--	0.39	--	--	--
		I-405 NB Direct On-Ramp	Bellflower Boulevard	None	0.28	--	--	0.18	--	--	0.31	--	--	0.19	--	--	0.30	--	--	0.18	--	--	N	0.33	--	--	0.20	--	--	0.32	--	--	0.19	--	--	--
	12	Willow Street	Bellflower Boulevard	Sig	**0.84**	**81.2**	**F**	0.92	40.1	D	1.01	48.8	D	1.01	54.4	D	**1.02**	**78.0**	**E**	0.99	43.8	D	N	**1.09**	**67.3**	**E**	**1.09**	**70.6**	**E**	**1.07**	**56.6**	**E**	1.08	53.1	D	N
	13	Los Coyotes Diagonal	Bellflower Boulevard	Sig	0.63	31.3	C	**0.97**	**72.8**	**E**	0.65	26.4	C	1.00	42.1	D	0.62	27.4	C	1.03	41.2	D	N	0.70	26.9	C	**1.13**	**56.8**	**E**	0.67	27.7	C	1.13	54.2	D	N
		Los Coyotes Diagonal	I-405 SB Direct On-Ramp	None	0.06	--	--	0.09	--	--	0.06	--	--	0.12	--	--	0.08	--	--	0.14	--	--	--	0.07	--	--	0.13	--	--	0.08	--	--	0.15	--	--	--
	14	I-405 SB Loop Off-Ramp	Bellflower Boulevard	None	0.12	--	--	0.26	--	--	0.12	--	--	0.32	--	--	0.12	--	--	0.25	--	--	--	0.13	--	--	0.34	--	--	0.13	--	--	0.27	--	--	--
	15	Los Coyotes Diagonal	I-405 SB Direct Off-Ramp	Sig	0.44	14.4	B	0.45	13.4	B	0.52	10.0	B	0.47	16.0	B	0.52	10.4	B	0.48	14.1	B	N	0.56	10.6	B	0.51	16.8	B	0.56	11.0	B	0.52	14.8	B	N
		Los Coyotes Diagonal	I-405 SB Loop On-Ramp	None	0.14	--	--	0.13	--	--	0.16	--	--	0.17	--	--	0.31	--	--	0.20	--	--	--	0.18	--	--	0.18	--	--	0.33	--	--	0.21	--	--	--
	16	Willow Street	Los Coyotes Diagonal	Sig	0.72	51.5	D	**0.74**	**102.8**	**F**	0.78	44.4	D	1.02	35.1	D	0.86	30.7	C	1.09	44.1	D	N	0.87	48.8	D	1.18	45.4	D	0.86	46.1	D	**1.17**	**71.7**	**E**	N
Woodruff Avenue at I-405	17	Willow Street	Woodruff Avenue	Sig	**1.07**	**86.8**	**F**	0.77	30.4	C	**1.33**	**147.9**	**F**	0.87	40.4	D	**1.22**	**136.3**	**F**	0.77	37.4	D	N	**1.44**	**180.5**	**F**	0.94	51.5	D	**1.38**	**167.9**	**F**	**0.85**	**64.1**	**E**	N
	18	I-405 NB Direct Off-Ramp	Woodruff Avenue	None	0.15	--	--	0.17	--	--	0.39	--	--	0.19	--	--	0.44	--	--	0.23	--	--	--	0.42	--	--	0.20	--	--	0.47	--	--	0.25	--	--	--
		I-405 NB Direct On-Ramp	Woodruff Avenue	None	0.25	--	--	0.20	--	--	0.31	--	--	0.21	--	--	0.29	--	--	0.21	--	--	--	0.34	--	--	0.23	--	--	0.31	--	--	0.23	--	--	--
	19	I-405 SB Direct Off-Ramp	Woodruff Avenue	None	0.48	--	--	0.38	--	--	0.52	--	--	0.47	--	--	0.51	--	--	0.46	--	--	--	0.56	--	--	0.51	--	--	0.55	--	--	0.50	--	--	--
		I-405 SB Direct On-Ramp	Woodruff Avenue	None	0.27	--	--	0.19	--	--	0.41	--	--	0.23	--	--	0.44	--	--	0.26	--	--	--	0.45	--	--	0.25	--	--	0.47	--	--	0.28	--	--	--
Palo Verde Avenue/ Stearns Street at I-405	20	I-405 NB Direct Off-Ramp	Palo Verde Avenue	Sig	0.54	11.3	B	0.45	13.7	B	0.78	17.7	B	0.61	11.8	B	0.69	15.3	B	0.59	11.8	B	N	0.95	21.2	C	0.70	12.6	B	0.82	17.4	B	0.72	13.3	B	N
		I-405 NB Loop On-Ramp	Palo Verde Avenue	None	0.11	--	--	0.20	--	--	0.13	--	--	0.22	--	--	0.10	--	--	0.19	--	--	--	0.14	--	--	0.23	--	--	0.11	--	--	0.20	--	--	--
	21	Woodruff Avenue	Palo Verde Avenue	Sig	**0.87**	**86.6**	**F**	0.59	21.3	C	0.84	13.6	B	0.66	10.3	B	0.82	13.8	B	0.70	11.3	B	N	0.91	15.9	B	0.72	11.3	B	0.89	15.9	B	0.76	12.1	B	N
	22	Stearns Street	Palo Verde Avenue	Sig	0.73	19.4	B	0.75	25.2	C	0.86	18.9	B	0.83	20.5	C	0.83	17.9	B	0.83	20.2	C	N	0.94	22.0	C	0.92	24.4	C	0.91	20.3	C	0.92	23.9	C	N
	23	Stearns Street	I-405 SB Direct On-Ramp	None	0.28	--	--	0.39	--	--	0.30	--	--	0.46	--	--	0.29	--	--	0.40	--	--	--	0.33	--	--	0.50	--	--	0.31	--	--	0.43	--	--	--

Table 3.1.6-29: Years 2020 and 2040 Peak-Hour Intersections LOS and Adverse Effect Determination after Traffic Measures for Alternative 2 – Locations in Los Angeles County

Interchange Location	Intersection #	Intersection Location: East/West Street	Intersection Location: North/South Street	Traffic Control	Year 2009: Existing Traffic: AM Peak Hour: V/C	Year 2009: Existing Traffic: AM Peak Hour: Avg Delay (sec)	Year 2009: Existing Traffic: AM Peak Hour: LOS	Year 2009: Existing Traffic: PM Peak Hour: V/C	Year 2009: Existing Traffic: PM Peak Hour: Avg Delay (sec)	Year 2009: Existing Traffic: PM Peak Hour: LOS	Year 2020: No Build Traffic on No Build Geometry: AM Peak Hour: D/C	Year 2020: No Build Traffic on No Build Geometry: AM Peak Hour: Avg Delay (sec)	Year 2020: No Build Traffic on No Build Geometry: AM Peak Hour: LOS	Year 2020: No Build Traffic on No Build Geometry: PM Peak Hour: D/C	Year 2020: No Build Traffic on No Build Geometry: PM Peak Hour: Avg Delay (sec)	Year 2020: No Build Traffic on No Build Geometry: PM Peak Hour: LOS	Year 2020: Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures: AM Peak Hour: D/C	Year 2020: Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures: AM Peak Hour: Avg Delay (sec)	Year 2020: Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures: AM Peak Hour: LOS	Year 2020: Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures: PM Peak Hour: D/C	Year 2020: Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures: PM Peak Hour: Avg Delay (sec)	Year 2020: Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures: PM Peak Hour: LOS	Year 2020: No Build-Alternative 2 Adverse Effect	Year 2040: No Build Traffic on No Build Geometry: AM Peak Hour: D/C	Year 2040: No Build Traffic on No Build Geometry: AM Peak Hour: Avg Delay (sec)	Year 2040: No Build Traffic on No Build Geometry: AM Peak Hour: LOS	Year 2040: No Build Traffic on No Build Geometry: PM Peak Hour: D/C	Year 2040: No Build Traffic on No Build Geometry: PM Peak Hour: Avg Delay (sec)	Year 2040: No Build Traffic on No Build Geometry: PM Peak Hour: LOS	Year 2040: Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures: AM Peak Hour: D/C	Year 2040: Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures: AM Peak Hour: Avg Delay (sec)	Year 2040: Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures: AM Peak Hour: LOS	Year 2040: Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures: PM Peak Hour: D/C	Year 2040: Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures: PM Peak Hour: Avg Delay (sec)	Year 2040: Alternative 2 Traffic on Alternative 2 Geometry including Traffic Measures: PM Peak Hour: LOS	Year 2040: No Build-Alternative 2 Adverse Effect
Studebaker Road at I-405	24	I-405 NB Direct On-Ramp	Studebaker Road	Sig	0.50	4.0	A	0.55	4.3	A	0.51	2.6	A	0.47	4.7	A	0.54	3.3	A	0.52	2.7	A	N	0.55	2.8	A	0.51	4.9	A	0.58	3.6	A	0.56	2.8	A	N
	25	I-405 SB Direct Off-Ramp	Studebaker Road	Stop	0.15	13.8	B	0.04	10.8	B	**0.86**	**68.4**	**F**	0.34	16.2	C	**0.90**	**61.5**	**F**	0.61	31.4	D	N	**1.02**	**98.3**	**F**	0.33	15.7	C	**1.04**	**81.3**	**F**	0.65	33.1	D	N
				*Sig**	*N/A*						*0.65*	*8.4*	*A*	*0.66*	*5.8*	*A*	*0.65*	*8.9*	*A*	*0.65*	*6.1*	*A*		*0.71*	*9.1*	*A*	*0.72*	*7.0*	*A*	*0.71*	*9.7*	*A*	*0.72*	*7.0*	*A*	
	26	Atherton Street	Studebaker Road	Sig	0.46	9.2	A	0.74	23.3	C	0.54	9.3	A	0.78	13.8	B	0.59	8.5	A	0.79	15.0	B	N	0.60	10.7	B	0.85	15.7	B	0.65	9.5	A	0.86	17.1	B	N
Studebaker Road at SR-22/7th Street	27	SR-22 WB On-/Off-Ramp	Studebaker Road	Sig	0.49	16.0	B	0.74	22.1	C	0.46	12.8	B	0.79	28.0	C	0.49	13.0	B	0.83	28.9	C	N	0.50	13.1	B	0.86	30.4	C	0.54	13.4	B	0.89	31.8	C	N
	28	SR-22 EB On-/Off-Ramp	Studebaker Road	Sig	0.72	17.6	B	0.82	17.1	B	0.91	21.3	C	0.93	25.8	C	0.97	30.9	C	0.98	30.1	C	N	0.99	30.4	C	1.03	37.1	D	1.06	45.2	D	1.09	43.9	D	N
	29	SR-22 WB On-/Off-Ramp	College Park Drive	Stop	0.39	18.8	C	**0.65**	**59.9**	**F**	N/A						N/A						N	N/A						N/A						N
				*Sig**	*N/A*						0.65	14.1	B	**1.07**	**110.1**	**F**	0.46	10.8	B	0.73	12.5	B		0.71	15.5	B	**1.16**	**147.2**	**F**	0.48	12.6	B	0.70	30.1	C	
7th Street	30	7th Street	Pacific Coast Highway	Sig	**0.95**	**92.9**	**F**	**1.03**	**82.6**	**F**	0.94	49.2	D	0.95	35.9	D	0.94	37.9	D	0.96	39.4	D	N	**1.02**	**65.8**	**E**	**1.03**	**58.7**	**E**	1.02	42.9	D	1.04	48.5	D	N
	31	7th Street	Bellflower Boulevard	Sig	**1.01**	**73.6**	**E**	**0.91**	**90.3**	**F**	**1.04**	**68.9**	**E**	0.98	47.9	D	0.93	32.9	C	0.87	32.8	C	N	**1.13**	**82.4**	**F**	**1.06**	**63.0**	**E**	1.01	42.8	D	0.95	39.3	D	N
	32	Pacific Coast Highway	Bellflower Boulevard	Sig	0.47	22.3	C	0.73	22.5	C	0.53	38.8	D	0.70	20.4	C	0.54	34.3	C	0.58	25.7	C	N	0.57	39.1	D	0.82	32.1	C	0.58	36.7	D	0.63	30.9	C	N
	33	7th Street	Channel Drive	Sig	0.72	32.9	C	0.88	30.3	C	0.71	24.5	C	0.94	22.7	C	0.75	10.0	B	0.82	15.2	B	N	0.77	25.7	C	1.02	50.8	D	0.81	14.1	B	0.88	18.8	B	N
	34	7th Street	W. Campus Drive	Sig	**0.83**	**112.9**	**F**	0.72	31.1	C	0.79	31.2	C	0.81	32.0	C	0.76	15.3	B	0.78	35.0	C	N	0.85	53.1	D	**0.87**	**58.5**	**E**	0.77	7.8	A	0.83	8.3	A	N
	35	7th Street	E. Campus Drive	Sig	0.97	23.1	C	0.73	24.7	C	1.03	35.8	D	0.87	14.6	B	1.02	35.6	D	0.88	16.3	B	N	**1.12**	**55.8**	**E**	0.96	16.7	B	1.11	51.8	D	0.97	25.8	C	N
	36	7th Street	Park Avenue	Sig	0.68	12.2	B	0.74	15.7	B	0.69	14.8	B	0.81	19.2	B	0.71	15.8	B	0.81	19.2	B	N	0.82	17.1	B	0.86	23.7	C	0.77	18.0	B	0.86	23.4	C	N

Notes:

1. LOS – Level of Service; V/C – Volume-to- Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio
2. * = Intersection is not signalized under existing or No Build conditions.
   - At the I-405 SB Direct Off-Ramp intersection with Studebaker Road, the signalized row is included only to determine if there is an adverse effect at the intersection. If a stop-controlled intersection has an LOS E or F under future conditions, then the intersection is reanalyzed as a signalized intersection to identify any adverse effects, because stop-controlled analysis does not provide an overall intersection metric.
   - The proposed traffic measure includes installation of a signal at the SR-22 WB On-/Off-Ramp intersection with College Park Drive. To determine if the measure addresses the adverse effect, a comparison is made between the proposed signalized intersection and the no-build condition assuming a traffic signal. The traffic signal is assumed for the no-build condition because stop-controlled analysis does not provide an overall intersection metric to determine if the adverse effect at the intersection has been addressed.
3. Bold indicates an intersection forecast to operate at LOS E or F.
4. Shaded cells indicate an adverse effect.
5. -- = LOS and average delay are not calculated for intersections without traffic control. The adverse effect determination applies only to controlled intersections.
6. Intersection numbers correspond to the intersection numbers shown on the intersection traffic volumes figures.
7. For future conditions, the D/C ratio is used instead of the V/C ratio.

The I-605 mainline is anticipated to operate at LOS C in the AM peak hour in the northbound direction and LOS E in the southbound direction in 2020. In the PM peak hour, the I-605 freeway mainline is anticipated to operate at LOS D in the northbound direction and LOS E in the southbound direction. The v/c ratios in the GP lanes of the I-605 freeway mainline during the AM peak hour are **0.78** in the northbound direction and **1.04** in the southbound direction. During the PM peak hour, the v/c ratios are **0.88** in the northbound direction and **1.03** in the southbound direction.

The SR-22/7th Street freeway mainline is anticipated to operate at LOS E in the AM peak hour in both directions in 2020. In the PM peak hour, the SR-22/7th Street freeway mainline is LOS D in the eastbound direction and LOS F in the westbound direction. The v/c ratios in the GP lanes of the SR-22/7th Street freeway mainline during the AM peak hour are **1.12** in the eastbound direction and **1.11** in the westbound direction. During the PM peak hour, the v/c ratios are **0.96** in the eastbound direction and **1.31** in the westbound direction.

Table 3.1.6-14 presents the v/c ratios for peak hours of Alternative 3 in 2020 for the HOV (carpool) lanes. The range of v/c ratios in the HOV lanes during the AM peak hour is **0.81 to 1.12** and **0.76 to 1.24** during the PM peak hour.

Table 3.1.6-24 presents the LOS and v/c ratios for peak hours of Alternative 3 in 2040 for the GP lanes of the freeway mainline. Under Alternative 3 conditions in year 2040, the freeway mainline between I-605 and Lakewood Boulevard is anticipated to operate at LOS F in the AM peak hour in the northbound direction and LOS E and F in the southbound direction. In the PM peak hour, the I-405 freeway mainline is anticipated to operate at LOS F in both directions. The range of v/c ratios in the GP lanes of the I-405 freeway mainline during the AM peak hour is 1.03 to 1.33 and 1.11 to 1.53 during the PM peak hour.

The I-605 mainline is anticipated to operate at LOS D in the AM peak hour in the northbound direction and LOS F in the southbound direction in 2040. In the PM peak hour, the I-605 freeway mainline is anticipated to operate at LOS D in the northbound direction and LOS F in the southbound direction. The v/c ratios in the GP lanes of the I-605 freeway mainline during the AM peak hour are **0.84** in the northbound direction and **1.13** in the southbound direction. During the PM peak hour, the v/c ratios are **0.95** in the northbound direction and **1.11** in the southbound direction.

The SR-22/7th Street freeway mainline is anticipated to operate at LOS E in both directions during the AM peak hour in 2040. In the PM peak hour, the SR-22/7th Street freeway mainline is anticipated to operate at LOS D in the eastbound direction and LOS F in the westbound

direction. The v/c ratios in the GP lanes of the SR-22/7th Street freeway mainline during the AM peak hour are **1.12** in the eastbound direction and **1.11** in the westbound direction. During the PM peak hour, the v/c ratios are **0.96** in the eastbound direction and **1.31** in the westbound direction.

Table 3.1.6-25 presents the v/c ratios for peak hours of Alternative 3 in 2040 for the HOV (carpool) lanes. The range of v/c ratios in the HOV lanes during the AM peak hour is **0.88 to 1.42** and **0.82 to 1.65** during the PM peak hour.

A more-detailed link-by-link presentation of Alternative 3 traffic conditions in 2020 and 2040 for GP and HOV lanes is included in Appendix L2.

Freeway Connector Volumes. Tables 3.1.6-15 and 3.1.6-26 provide the 2020 and 2040 forecast for Alternative 3, respectively, of branch connector volumes and v/c ratios on ramps within the I-405/I-605/SR-22/ 7th Street interchange not presented above under the Orange County heading. Branch connectors are forecast to operate with v/c ratios ranging from **0.24 to 1.12** in 2020 and from **0.26 to 1.12** in 2040 under Alternative 3. The branch connector from I-605 southbound/ I-405 southbound to 7th Street is anticipated to operate with a v/c ratio in excess of 1.00 in 2040 during the AM peak hour.

In no instance would additional lanes on branch connectors be feasible. Ramp metering was considered as a means to improve connector operations, but it was not included in the project because it would further reduce the capacity of the branch connectors.

Arterials, Intersections, and Interchanges. Alternative 3 AM and PM peak-hour traffic volumes for arterial and interchange study locations within the study area in Los Angeles County for 2020 and 2040 are illustrated in Figures 3.1.6-29 and 3.1.6-33, respectively. A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2020 Alternative 3 conditions is provided in Table 3.1.6-30 for all of the study intersections. Alternative 3 conditions appear in Table 3.1.6-30 under the "Alternative 3 Traffic on No Build Geometry" heading, where forecast Alternative 3 traffic is evaluated on no-build lanes and traffic control. In Table 3.1.6-30 for 2020 under Alternative 3, the study intersections are anticipated to operate at LOS D or better, except for six intersections (as shown in bold) that are anticipated to operate at LOS E or F during either the AM or PM peak hour or both. These six intersections include the four intersections that are anticipated to operate at LOS E or F under no-build conditions in 2020.

Table 3.1.6-30: Years 2020 and 2040 Peak-Hour Intersections LOS and Adverse Effect Determination for Alternative 3 – Locations in Los Angeles County

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2009						Year 2020												Year 2040											
					Existing Traffic						No Build Traffic on No Build Geometry						Alternative 3 Traffic on No Build Geometry						No Build-Alternative 3 Adverse Effect	No Build Traffic on No Build Geometry						Alternative 3 Traffic on No Build Geometry						No Build-Alternative 3 Adverse Effect
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
		East/West Street	North/South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	
Carson Street at I-605	1	Carson Street	I-605 SB Off-Ramp	Sig	0.58	21.9	C	0.61	17.8	B	0.57	22.3	C	0.68	23.8	C	0.64	11.1	B	0.74	13.0	B	N	0.62	22.4	C	0.73	24.5	C	0.69	11.7	B	0.80	14.1	B	N
	2	Carson Street	I-605 SB Direct On-Ramp	None	0.15	--	--	0.25	--	--	0.22	--	--	0.33	--	--	0.24	--	--	0.32	--	--	--	0.24	--	--	0.36	--	--	0.26	--	--	0.34	--	--	--
		Carson Street	I-605 SB Loop On-Ramp	None	0.24	--	--	0.20	--	--	0.33	--	--	0.33	--	--	0.33	--	--	0.37	--	--	--	0.35	--	--	0.36	--	--	0.36	--	--	0.39	--	--	--
	3	Carson Street	I-605 NB Off-Ramp	Sig	0.55	14.8	B	0.66	12.4	B	0.59	21.8	C	0.76	20.6	C	0.61	20.9	C	0.75	17.6	B	N	0.63	23.6	C	0.82	23.2	C	0.66	22.9	C	0.81	19.4	B	N
		Carson Street	I-605 NB Loop On-Ramp	None	0.23	--	--	0.45	--	--	0.31	--	--	0.35	--	--	0.28	--	--	0.30	--	--	--	0.33	--	--	0.37	--	--	0.31	--	--	0.33	--	--	--
		Carson Street	I-605 NB Direct On-Ramp	None	0.40	--	--	0.32	--	--	0.52	--	--	0.49	--	--	0.51	--	--	0.46	--	--	--	0.56	--	--	0.53	--	--	0.55	--	--	0.49	--	--	--
	4	Carson Street	Pioneer Boulevard	Sig	0.76	48.1	D	0.76	35.1	D	0.79	31.1	C	0.84	33.7	C	0.76	31.7	C	0.83	31.8	C	N	0.86	35.1	D	0.92	43.9	D	0.84	37.3	D	0.92	44.5	D	N
Spring Street/ Cerritos Avenue at I-605	5	Spring Street/Cerritos Avenue	I-605 SB Off-Ramp	Sig	0.79	26.2	C	0.60	18.4	B	0.68	14.2	B	0.65	10.9	B	0.70	14.4	B	0.60	9.8	A	N	0.74	15.4	B	0.71	12.0	B	0.75	15.5	B	0.64	10.7	B	N
	6	Spring Street/Cerritos Avenue	I-605 NB On-Ramp	Sig	0.84	13.5	B	0.81	11.1	B	0.76	10.5	B	0.79	8.2	A	0.74	6.1	A	0.75	4.9	A	N	0.82	11.6	B	0.86	9.8	A	0.80	7.1	A	0.81	6.0	A	N
Lakewood Boulevard/ Willow Street at I-405	7	I-405 NB Direct Off-Ramp	Lakewood Boulevard	None	0.35	--	--	0.34	--	--	0.38	--	--	0.38	--	--	0.44	--	--	0.43	--	--	--	0.41	--	--	0.41	--	--	0.47	--	--	0.46	--	--	--
		I-405 NB Direct On-Ramp	Lakewood Boulevard	None	0.22	--	--	0.21	--	--	0.38	--	--	0.23	--	--	0.38	--	--	0.23	--	--	--	0.41	--	--	0.25	--	--	0.41	--	--	0.25	--	--	--
		I-405 NB Loop Off-Ramp	Lakewood Boulevard	None	0.19	--	--	0.18	--	--	0.23	--	--	0.22	--	--	0.28	--	--	0.26	--	--	--	0.25	--	--	0.23	--	--	0.30	--	--	0.28	--	--	--
		I-405 NB Loop On-Ramp	Lakewood Boulevard	None	0.50	--	--	0.38	--	--	0.53	--	--	0.41	--	--	0.52	--	--	0.41	--	--	--	0.57	--	--	0.44	--	--	0.57	--	--	0.45	--	--	--
	8	I-405 SB Loop On-Ramp	Lakewood Boulevard	None	0.19	--	--	0.23	--	--	0.22	--	--	0.25	--	--	0.23	--	--	0.27	--	--	--	0.24	--	--	0.27	--	--	0.25	--	--	0.29	--	--	--
		I-405 SB Direct Off-Ramp	Lakewood Boulevard	None	0.40	--	--	0.31	--	--	0.43	--	--	0.48	--	--	0.44	--	--	0.46	--	--	--	0.46	--	--	0.52	--	--	0.48	--	--	0.50	--	--	--
	9	Willow Street	Lakewood Boulevard	Sig	0.76	31.1	C	**0.92**	**66.2**	**E**	0.75	31.2	C	0.89	43.0	D	0.72	31.1	C	0.96	44.3	D	N	0.81	33.6	C	0.93	48.4	D	0.77	32.4	C	1.02	52.0	D	N
	10	Willow Street	I-405 SB Loop Off-Ramp	None	0.32	--	--	0.30	--	--	0.35	--	--	0.46	--	--	0.36	--	--	0.45	--	--	--	0.37	--	--	0.50	--	--	0.38	--	--	0.49	--	--	--
		Willow Street	I-405 SB Direct On-Ramp	None	0.26	--	--	0.38	--	--	0.28	--	--	0.41	--	--	0.30	--	--	0.43	--	--	--	0.31	--	--	0.44	--	--	0.33	--	--	0.46	--	--	--
Bellflower Boulevard/ Los Coyotes Diagonal at I-405	11	I-405 NB Off-Ramp	Bellflower Boulevard	Sig	0.41	9.3	A	0.48	11.9	B	0.51	10.8	B	0.53	10.6	B	0.41	9.1	A	0.53	11.1	B	N	0.55	11.6	B	0.58	11.3	B	0.45	9.7	A	0.58	11.7	B	N
		I-405 NB Loop On-Ramp	Bellflower Boulevard	None	0.49	--	--	0.35	--	--	0.53	--	--	0.37	--	--	0.54	--	--	0.36	--	--	--	0.57	--	--	0.40	--	--	0.59	--	--	0.39	--	--	--
		I-405 NB Direct On-Ramp	Bellflower Boulevard	None	0.28	--	--	0.18	--	--	0.31	--	--	0.19	--	--	0.32	--	--	0.18	--	--	--	0.33	--	--	0.20	--	--	0.34	--	--	0.19	--	--	--
	12	Willow Street	Bellflower Boulevard	Sig	**0.84**	**81.2**	**F**	0.92	40.1	D	1.01	48.8	D	1.01	54.4	D	0.86	32.9	C	**1.15**	**76.5**	**E**	Y	**1.09**	**67.3**	**E**	**1.09**	**70.6**	**E**	0.93	37.7	D	**1.25**	**105.9**	**F**	Y
	13	Los Coyotes Diagonal	Bellflower Boulevard	Sig	0.63	31.3	C	**0.97**	**72.8**	**E**	0.65	26.4	C	1.00	42.1	D	0.64	25.8	C	1.12	50.2	D	N	0.70	26.9	C	**1.13**	**56.8**	**E**	0.69	26.0	C	**1.22**	**65.5**	**E**	Y
		Los Coyotes Diagonal	I-405 SB Direct On-Ramp	None	0.06	--	--	0.09	--	--	0.06	--	--	0.12	--	--	0.09	--	--	0.12	--	--	--	0.07	--	--	0.13	--	--	0.09	--	--	0.13	--	--	--
	14	I-405 SB Loop Off-Ramp	Bellflower Boulevard	None	0.12	--	--	0.26	--	--	0.12	--	--	0.32	--	--	0.12	--	--	0.37	--	--	--	0.13	--	--	0.34	--	--	0.13	--	--	0.40	--	--	--
	15	Los Coyotes Diagonal	I-405 SB Direct Off-Ramp	Sig	0.44	14.4	B	0.45	13.4	B	0.52	10.0	B	0.47	16.0	B	0.53	10.2	B	0.52	9.8	A	N	0.56	10.6	B	0.51	16.8	B	0.58	11.4	B	0.56	10.2	B	N
		Los Coyotes Diagonal	I-405 SB Loop On-Ramp	None	0.14	--	--	0.13	--	--	0.16	--	--	0.17	--	--	0.32	--	--	0.17	--	--	--	0.18	--	--	0.18	--	--	0.35	--	--	0.19	--	--	--
	16	Willow Street	Los Coyotes Diagonal	Sig	0.72	51.5	D	**0.74**	**102.8**	**F**	0.78	44.4	D	1.02	35.1	D	0.75	40.9	D	**1.26**	**66.5**	**E**	Y	0.87	48.8	D	1.18	45.4	D	0.86	42.0	D	**1.41**	**92.7**	**F**	Y
Woodruff Avenue at I-405	17	Willow Street	Woodruff Avenue	Sig	**1.07**	**86.8**	**F**	0.77	30.4	C	**1.33**	**147.9**	**F**	0.87	40.4	D	**1.30**	**137.0**	**F**	0.87	37.1	D	N	**1.44**	**180.5**	**F**	0.94	51.5	D	**1.40**	**166.5**	**F**	0.88	42.2	D	N
	18	I-405 NB Direct Off-Ramp	Woodruff Avenue	None	0.15	--	--	0.17	--	--	0.39	--	--	0.19	--	--	0.40	--	--	0.22	--	--	--	0.42	--	--	0.20	--	--	0.43	--	--	0.24	--	--	--
		I-405 NB Direct On-Ramp	Woodruff Avenue	None	0.25	--	--	0.20	--	--	0.31	--	--	0.21	--	--	0.31	--	--	0.22	--	--	--	0.34	--	--	0.23	--	--	0.34	--	--	0.23	--	--	--
	19	I-405 SB Direct Off-Ramp	Woodruff Avenue	None	0.48	--	--	0.38	--	--	0.52	--	--	0.47	--	--	0.52	--	--	0.41	--	--	--	0.56	--	--	0.51	--	--	0.56	--	--	0.45	--	--	--
		I-405 SB Direct On-Ramp	Woodruff Avenue	None	0.27	--	--	0.19	--	--	0.41	--	--	0.23	--	--	0.43	--	--	0.24	--	--	--	0.45	--	--	0.25	--	--	0.46	--	--	0.26	--	--	--
Palo Verde Avenue / Stearns Street at I-405	20	I-405 NB Direct Off-Ramp	Palo Verde Avenue	Sig	0.54	11.3	B	0.45	13.7	B	0.78	17.7	B	0.61	11.8	B	0.84	17.0	B	0.69	11.8	B	N	0.95	21.2	C	0.70	12.6	B	1.02	22.9	C	0.80	14.0	B	N
		I-405 NB Loop On-Ramp	Palo Verde Avenue	None	0.11	--	--	0.20	--	--	0.13	--	--	0.22	--	--	0.14	--	--	0.22	--	--	--	0.14	--	--	0.23	--	--	0.15	--	--	0.23	--	--	--
	21	Woodruff Avenue	Palo Verde Avenue	Sig	**0.87**	**86.6**	**F**	0.59	21.3	C	0.84	13.6	B	0.66	10.3	B	0.84	13.8	B	0.69	9.7	A	N	0.91	15.9	B	0.72	11.3	B	0.92	16.9	B	0.75	10.3	B	N
	22	Stearns Street	Palo Verde Avenue	Sig	0.73	19.4	B	0.75	25.2	C	0.86	18.9	B	0.83	20.5	C	0.94	22.1	C	0.92	22.9	C	N	0.94	22.0	C	0.92	24.4	C	1.02	30.8	C	1.02	29.9	C	N
	23	Stearns Street	I-405 SB Direct On-Ramp	None	0.28	--	--	0.39	--	--	0.30	--	--	0.46	--	--	0.35	--	--	0.46	--	--	--	0.33	--	--	0.50	--	--	0.38	--	--	0.50	--	--	--

Table 3.1.6-30: Years 2020 and 2040 Peak-Hour Intersections LOS and Adverse Effect Determination for Alternative 3 – Locations in Los Angeles County

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2009						Year 2020												Year 2040											
					Existing Traffic						No Build Traffic on No Build Geometry						Alternative 3 Traffic on No Build Geometry						No Build-Alternative 3 Adverse Effect	No Build Traffic on No Build Geometry						Alternative 3 Traffic on No Build Geometry						No Build-Alternative 3 Adverse Effect
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
		East/West Street	North/South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	
Studebaker Road at I-405	24	I-405 NB Direct On-Ramp	Studebaker Road	Sig	0.50	4.0	A	0.55	4.3	A	0.51	2.6	A	0.47	4.7	A	0.63	4.1	A	0.52	4.0	A	N	0.55	2.8	A	0.51	4.9	A	0.68	4.5	A	0.56	3.9	A	N
	25	I-405 SB Direct Off-Ramp	Studebaker Road	Stop	0.15	13.8	B	0.04	10.8	B	**0.86**	**68.4**	**F**	0.34	16.2	C	**1.04**	**80.0**	**F**	0.44	20.4	C	N	**1.02**	**98.3**	**F**	0.33	15.7	C	**1.20**	**116.8**	**F**	0.45	20.1	C	N
				*Sig**	*N/A*						*0.65*	*8.4*	*A*	*0.66*	*5.8*	*A*	*0.69*	*9.3*	*A*	*0.67*	*4.6*	*A*		*0.71*	*9.1*	*A*	*0.72*	*7.0*	*A*	*0.74*	*7.0*	*A*	*0.73*	*5.5*	*A*	
	26	Atherton St	Studebaker Road	Sig	0.46	9.2	A	0.74	23.3	C	0.54	9.3	A	0.78	13.8	B	0.57	8.8	A	0.81	14.6	B	N	0.60	10.7	B	0.85	15.7	B	0.62	9.7	A	0.88	17.1	B	N
Studebaker Road at SR-22/ 7th Street	27	SR-22 WB On-/Off-Ramp	Studebaker Road	Sig	0.49	16.0	B	0.74	22.1	C	0.46	12.8	B	0.79	28.0	C	0.51	12.8	B	0.87	30.2	C	N	0.50	13.1	B	0.86	30.4	C	0.55	13.2	B	0.94	35.2	D	N
	28	SR-22 EB On-/Off-Ramp	Studebaker Road	Sig	0.72	17.6	B	0.82	17.1	B	0.91	21.3	C	0.93	25.8	C	0.93	25.8	C	0.97	29.0	C	N	0.99	30.4	C	1.03	37.1	D	1.02	37.5	D	1.10	44.4	D	N
	29	SR-22 WB On-/Off-Ramp	College Park Drive	Stop	0.39	18.8	C	**0.65**	**59.9**	**F**	0.43	21.3	C	**0.61**	**88.7**	**F**	0.12	19.7	C	**0.32**	**92.6**	**F**	N	0.51	25.3	D	**0.84**	**152.1**	**F**	0.15	22.8	C	**0.45**	**158.2**	**F**	N
				*Sig**	*N/A*						*0.65*	*14.1*	*B*	***1.07****	***110.1***	***F****	*0.61*	*12.1*	*B*	***1.08****	***125.8***	***F****		*0.71*	*15.5*	*B*	***1.16****	***147.2***	***F****	*0.66*	*13.3*	*B*	***1.17****	***88.0***	***F****	
7th Street	30	7th Street	Pacific Coast Highway	Sig	**0.95**	**92.9**	**F**	**1.03**	**82.6**	**F**	0.94	49.2	D	0.95	35.9	D	0.92	35.7	D	0.96	36.9	D	N	**1.02**	**65.8**	**E**	**1.03**	**58.7**	**E**	**1.04**	**55.9**	**E**	1.04	49.7	D	Y
	31	7th Street	Bellflower Boulevard	Sig	**1.01**	**73.6**	**E**	**0.91**	**90.3**	**F**	**1.04**	**68.9**	**E**	0.98	47.9	D	**1.09**	**66.4**	**E**	1.01	49.6	D	Y	**1.13**	**82.4**	**F**	**1.06**	**63.0**	**E**	**1.17**	**72.3**	**E**	**1.10**	**57.0**	**E**	Y
	32	Pacific Coast Highway	Bellflower Boulevard	Sig	0.47	22.3	C	0.73	22.5	C	0.53	38.8	D	0.70	20.4	C	0.54	30.2	C	0.75	22.1	C	N	0.57	39.1	D	0.82	32.1	C	0.58	26.9	C	0.88	26.8	C	N
	33	7th Street	Channel Drive	Sig	0.72	32.9	C	0.88	30.3	C	0.71	24.5	C	0.94	22.7	C	0.75	8.2	A	0.95	25.4	C	N	0.77	25.7	C	1.02	50.8	D	0.77	10.2	B	1.04	39.1	D	N
	34	7th Street	W. Campus Drive	Sig	**0.83**	**112.9**	**F**	0.72	31.1	C	0.79	31.2	C	0.81	32.0	C	0.80	34.6	C	0.86	47.4	D	N	0.85	53.1	D	**0.87**	**58.5**	**E**	**0.87**	**60.0**	**E**	**0.93**	**71.3**	**E**	Y
	35	7th Street	E. Campus Drive	Sig	0.97	23.1	C	0.73	24.7	C	1.03	35.8	D	0.87	14.6	B	1.05	45.2	D	0.90	16.0	B	N	**1.12**	**55.8**	**E**	0.96	16.7	B	**1.14**	**59.3**	**E**	0.99	18.9	B	Y
	36	7th Street	Park Avenue	Sig	0.68	12.2	B	0.74	15.7	B	0.69	14.8	B	0.81	19.2	B	0.77	15.1	B	0.85	21.6	C	N	0.82	17.1	B	0.86	23.7	C	0.84	17.5	B	0.85	27.6	C	N

Notes:

1. LOS – Level of Service; V/C – Volume-to- Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio; N/A – Not Applicable (see Note 2)
2. * = Intersection is not signalized under existing or No Build conditions. The signalized row is included only to determine if there is an adverse effect at the intersection. If a stop-controlled intersection has an LOS E or F under future conditions, then the intersection is reanalyzed as a signalized intersection to identify any adverse effects, because stop-controlled analysis does not provide an overall intersection metric. The number of LOS E or F locations and the number of locations with V/C or D/C greater than 1.00 identified in the text does not include the signalized row because the existing and no-build operation is based on the current stop control.
3. Bold indicates an intersection forecast to operate at LOS E or F.
4. Shaded cells indicate an adverse effect.
5. -- = LOS and average delay are not calculated for intersections without traffic control. The adverse effect determination applies only to controlled intersections.
6. Intersection numbers correspond to the intersection numbers shown on the intersection traffic volumes figures.
7. For future conditions, the D/C ratio is used instead of the V/C ratio.

Table 3.1.6-30 shows that the study intersections are anticipated to operate under capacity (i.e., v/c less than or equal to 1.00) in 2020 under Alternative 3 during peak hours, except for seven intersections that are anticipated to operate over capacity during either the AM or PM peak hour or both. These seven intersections include the five intersections that are anticipated to operate over capacity under the no-build condition in 2020.

A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2040 Alternative 3 conditions is provided in Table 3.1.6-30 for all of the study intersections. In Table 3.1.6-30 for 2040 under Alternative 3, the study intersections are anticipated to operate at LOS D or better, except for 10 intersections (as shown in bold) that are anticipated to operate at LOS E or F during either the AM or PM peak hour or both. Nine of these 10 intersections are anticipated to operate at LOS E or F under no-build conditions in 2040.

Table 3.1.6-30 shows that the study intersections are anticipated to operate under capacity (i.e., v/c less than or equal to 1.00) in 2040 under Alternative 3 during peak hours, except for 12 intersections that are anticipated to operate over capacity during either the AM or PM peak hour or both. These 12 intersections include the 10 intersections that are anticipated to operate over capacity under the no-build condition in 2040.

As highlighted in Table 3.1.6-30, the project contributions to adverse cumulative effects on the following seven study intersections under Alternative 3 in 2040 are discussed below:

Willow Street and Bellflower Boulevard (2040 PM peak hour under No Build Alternative projected D/C ratio is 1.09 with LOS E and under Alternative 3 projected D/C ratio is 1.25 with LOS F)

Los Coyotes Diagonal and Bellflower Boulevard (2040 PM peak hour under No Build Alternative projected D/C ratio is 1.13 with LOS E and under Alternative 3 projected D/C ratio is 1.22 with LOS E)

Willow Street and Los Coyotes Diagonal (2040 PM peak hour under No Build Alternative projected D/C ratio is 1.18 with LOS D and under Alternative 3 projected D/C ratio is 1.41 with LOS F)

7th Street and Pacific Coast Highway (2040 AM peak hour under No Build Alterative projected D/C ratio is 1.02 with LOS E and under Alternative 3 projected D/C ratio is 1.04 with LOS E)

7th Street and Bellflower Boulevard (2040 AM peak hour under No Build Alternative projected D/C ratio is 1.13 with LOS F and under Alternative 3 projected D/C ratio is 1.17 with LOS E; 2040 PM peak hour under No Build Alternative projected D/C ratio is 1.06 with LOS E and under Alternative 3 projected D/C ratio is 1.10 with LOS E)

7th Street and West Campus Drive (2040 AM peak hour under No Build Alternative projected D/C ratio is 0.85 with LOS D and under Alternative 3 projected D/C ratio is 0.87 with LOS E; 2040 PM peak hour under No Build Alternative projected D/C ratio is 0.87 with LOS E and under Alternative 3 projected D/C ratio is 0.93 with LOS E)

7th Street and East Campus Drive (2040 AM peak hour under No Build Alternative projected D/C ratio is 1.12 with LOS E and under Alternative 3 projected D/C ratio is 1.14 with LOS E)

Table 3.1.6-30 shows that the project would also contribute to adverse cumulative effects under Alternative 3 on the three study intersections listed below in 2020:

Willow Street and Bellflower Boulevard

Willow Street and Los Coyotes Diagonal

7th Street and Bellflower Boulevard

Measures to Lessen Traffic Impacts at Intersections. Traffic measures listed in Section 3.1.6.4, Avoidance, Minimization, and/or Mitigation Measures, are proposed to address the project contributions to adverse cumulative effects at the intersections identified above.

Table 3.1.6-31 provides a summary of the LOS analysis and v/c ratios for all of the study intersections during AM and PM peak hours anticipated in 2020 under Alternative 3 with all improvements, including the proposed traffic measures identified in Section 3.1.6.4, Avoidance, Minimization, and/or Mitigation Measures. LOS and v/c ratios with all improvements, including proposed traffic measures, appear in the table under the heading "Alternative 3 Traffic on Alternative 3 Geometry including Traffic Measures." Table 3.1.6-31 shows that, with all improvements including proposed traffic measures, Alternative 3 does not contribute to adverse cumulative effects on any study intersection in 2020.

Table 3.1.6-31 provides a summary of the LOS analysis and v/c ratios for all of the study intersections during AM and PM peak hours anticipated in 2040 under Alternative 3 with all improvements, including the proposed traffic measures identified in Section 3.1.6.4, Avoidance, Minimization, and/or Mitigation Measures. Table 3.1.6-31 shows that, with all improvements including proposed traffic measures, Alternative 3 does not contribute to adverse cumulative effects on any study intersection in 2040.

Table 3.1.6-31: Years 2020 and 2040 Peak-Hour Intersections LOS and Adverse Effect Determination after Traffic Measures for Alternative 3 – Locations in Los Angeles County

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2009						Year 2020												No Build-Alternative 3 Adverse Effect	Year 2040											No Build-Alternative 3 Adverse Effect
					Existing Traffic						No Build Traffic on No Build Geometry						Alternative 3 Traffic on Alternative 3 Geometry including Traffic Measures							No Build Traffic on No Build Geometry						Alternative 3 Traffic on Alternative 3 Geometry including Traffic Measures						
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
		East/West Street	North/South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	
Carson Street at I-605	1	Carson Street	I-605 SB Off-Ramp	Sig	0.58	21.9	C	0.61	17.8	B	0.57	22.3	C	0.68	23.8	C	0.64	11.1	B	0.74	13.0	B	N	0.62	22.4	C	0.73	24.5	C	0.69	11.7	B	0.80	14.1	B	N
	2	Carson Street	I-605 SB Direct On-Ramp	None	0.15	--	--	0.25	--	--	0.22	--	--	0.33	--	--	0.24	--	--	0.32	--	--	--	0.24	--	--	0.36	--	--	0.26	--	--	0.34	--	--	--
		Carson Street	I-605 SB Loop On-Ramp	None	0.24	--	--	0.20	--	--	0.33	--	--	0.33	--	--	0.33	--	--	0.37	--	--	--	0.35	--	--	0.36	--	--	0.36	--	--	0.39	--	--	--
	3	Carson Street	I-605 NB Off-Ramp	Sig	0.55	14.8	B	0.66	12.4	B	0.59	21.8	C	0.76	20.6	C	0.61	20.9	C	0.75	17.6	B	N	0.63	23.6	C	0.82	23.2	C	0.66	22.9	C	0.81	19.4	B	N
		Carson Street	I-605 NB Loop On-Ramp	None	0.23	--	--	0.45	--	--	0.31	--	--	0.35	--	--	0.28	--	--	0.30	--	--	--	0.33	--	--	0.37	--	--	0.31	--	--	0.33	--	--	--
		Carson Street	I-605 NB Direct On-Ramp	None	0.40	--	--	0.32	--	--	0.52	--	--	0.49	--	--	0.51	--	--	0.46	--	--	--	0.56	--	--	0.53	--	--	0.55	--	--	0.49	--	--	--
	4	Carson Street	Pioneer Boulevard	Sig	0.76	48.1	D	0.76	35.1	D	0.79	31.1	C	0.84	33.7	C	0.76	31.7	C	0.83	31.8	C	N	0.86	35.1	D	0.92	43.9	D	0.84	37.3	D	0.92	44.5	D	N
Spring Street/ Cerritos Avenue at I-605	5	Spring Street/Cerritos Avenue	I-605 SB Off-Ramp	Sig	0.79	26.2	C	0.60	18.4	B	0.68	14.2	B	0.65	10.9	B	0.70	14.4	B	0.60	9.8	A	N	0.74	15.4	B	0.71	12.0	B	0.75	15.5	B	0.64	10.7	B	N
	6	Spring Street/Cerritos Avenue	I-605 NB On-Ramp	Sig	0.84	13.5	B	0.81	11.1	B	0.76	10.5	B	0.79	8.2	A	0.74	6.1	A	0.75	4.9	A	N	0.82	11.6	B	0.86	9.8	A	0.80	7.1	A	0.81	6.0	A	N
Lakewood Boulevard/ Willow Street at I-405	7	I-405 NB Direct Off-Ramp	Lakewood Boulevard	None	0.35	--	--	0.34	--	--	0.38	--	--	0.38	--	--	0.44	--	--	0.43	--	--	--	0.41	--	--	0.41	--	--	0.47	--	--	0.46	--	--	--
		I-405 NB Direct On-Ramp	Lakewood Boulevard	None	0.22	--	--	0.21	--	--	0.38	--	--	0.23	--	--	0.38	--	--	0.23	--	--	--	0.41	--	--	0.25	--	--	0.41	--	--	0.25	--	--	--
		I-405 NB Loop Off-Ramp	Lakewood Boulevard	None	0.19	--	--	0.18	--	--	0.23	--	--	0.22	--	--	0.28	--	--	0.26	--	--	--	0.25	--	--	0.23	--	--	0.30	--	--	0.28	--	--	--
		I-405 NB Loop On-Ramp	Lakewood Boulevard	None	0.50	--	--	0.38	--	--	0.53	--	--	0.41	--	--	0.52	--	--	0.41	--	--	--	0.57	--	--	0.44	--	--	0.57	--	--	0.45	--	--	--
	8	I-405 SB Loop On-Ramp	Lakewood Boulevard	None	0.19	--	--	0.23	--	--	0.22	--	--	0.25	--	--	0.23	--	--	0.27	--	--	--	0.24	--	--	0.27	--	--	0.25	--	--	0.29	--	--	--
		I-405 SB Direct Off-Ramp	Lakewood Boulevard	None	0.40	--	--	0.31	--	--	0.43	--	--	0.48	--	--	0.44	--	--	0.46	--	--	--	0.46	--	--	0.52	--	--	0.48	--	--	0.50	--	--	--
	9	Willow Street	Lakewood Boulevard	Sig	0.76	31.1	C	**0.92**	**66.2**	**E**	0.75	31.2	C	0.89	43.0	D	0.72	31.1	C	0.96	44.3	D	N	0.81	33.6	C	0.93	48.4	D	0.77	32.4	C	1.02	52.0	D	N
	10	Willow Street	I-405 SB Loop Off-Ramp	None	0.32	--	--	0.30	--	--	0.35	--	--	0.46	--	--	0.36	--	--	0.45	--	--	--	0.37	--	--	0.50	--	--	0.38	--	--	0.49	--	--	--
		Willow Street	I-405 SB Direct On-Ramp	None	0.26	--	--	0.38	--	--	0.28	--	--	0.41	--	--	0.30	--	--	0.43	--	--	--	0.31	--	--	0.44	--	--	0.33	--	--	0.46	--	--	--
Bellflower Boulevard/ Los Coyotes Diagonal at I-405	11	I-405 NB Off-Ramp	Bellflower Boulevard	Sig	0.41	9.3	A	0.48	11.9	B	0.51	10.8	B	0.53	10.6	B	0.41	9.1	A	0.53	11.1	B	N	0.55	11.6	B	0.58	11.3	B	0.45	9.7	A	0.58	11.7	B	N
		I-405 NB Loop On-Ramp	Bellflower Boulevard	None	0.49	--	--	0.35	--	--	0.53	--	--	0.37	--	--	0.54	--	--	0.36	--	--	--	0.57	--	--	0.40	--	--	0.59	--	--	0.39	--	--	--
		I-405 NB Direct On-Ramp	Bellflower Boulevard	None	0.28	--	--	0.18	--	--	0.31	--	--	0.19	--	--	0.32	--	--	0.18	--	--	--	0.33	--	--	0.20	--	--	0.34	--	--	0.19	--	--	--
	12	Willow Street	Bellflower Boulevard	Sig	**0.84**	**81.2**	**F**	0.92	40.1	D	1.01	48.8	D	1.01	54.4	D	0.92	33.2	C	1.10	48.8	D	N	**1.09**	**67.3**	**E**	**1.09**	**70.6**	**E**	0.99	45.9	D	1.08	54.1	D	N
	13	Los Coyotes Diagonal	Bellflower Boulevard	Sig	0.63	31.3	C	**0.97**	**72.8**	**E**	0.65	26.4	C	1.00	42.1	D	0.64	25.8	C	1.12	50.2	D	N	0.70	26.9	C	**1.13**	**56.8**	**E**	0.70	22.8	C	1.10	53.5	D	N
		Los Coyotes Diagonal	I-405 SB Direct On-Ramp	None	0.06	--	--	0.09	--	--	0.06	--	--	0.12	--	--	0.09	--	--	0.12	--	--	--	0.07	--	--	0.13	--	--	0.09	--	--	0.13	--	--	--
	14	I-405 SB Loop Off-Ramp	Bellflower Boulevard	None	0.12	--	--	0.26	--	--	0.12	--	--	0.32	--	--	0.12	--	--	0.37	--	--	--	0.13	--	--	0.34	--	--	0.13	--	--	0.40	--	--	--
	15	Los Coyotes Diagonal	I-405 SB Direct Off-Ramp	Sig	0.44	14.4	B	0.45	13.4	B	0.52	10.0	B	0.47	16.0	B	0.53	10.2	B	0.52	9.8	A	N	0.56	10.6	B	0.51	16.8	B	0.58	11.4	B	0.56	10.2	B	N
		Los Coyotes Diagonal	I-405 SB Loop On-Ramp	None	0.14	--	--	0.13	--	--	0.16	--	--	0.17	--	--	0.32	--	--	0.17	--	--	--	0.18	--	--	0.18	--	--	0.35	--	--	0.19	--	--	--
	16	Willow Street	Los Coyotes Diagonal	Sig	0.72	51.5	D	**0.74**	**102.8**	**F**	0.78	44.4	D	1.02	35.1	D	0.71	32.5	C	0.96	25.4	C	N	0.87	48.8	D	1.18	45.4	D	0.73	42.2	D	**1.19**	**62.2**	**E**	N
Woodruff Avenue at I-405	17	Willow Street	Woodruff Avenue	Sig	**1.07**	**86.8**	**F**	0.77	30.4	C	**1.33**	**147.9**	**F**	0.87	40.4	D	**1.30**	**137.0**	**F**	0.87	37.1	D	N	**1.44**	**180.5**	**F**	0.94	51.5	D	**1.40**	**166.5**	**F**	0.88	42.2	D	--
	18	I-405 NB Direct Off-Ramp	Woodruff Avenue	None	0.15	--	--	0.17	--	--	0.39	--	--	0.19	--	--	0.40	--	--	0.22	--	--	--	0.42	--	--	0.20	--	--	0.43	--	--	0.24	--	--	--
		I-405 NB Direct On-Ramp	Woodruff Avenue	None	0.25	--	--	0.20	--	--	0.31	--	--	0.21	--	--	0.31	--	--	0.22	--	--	--	0.34	--	--	0.23	--	--	0.34	--	--	0.23	--	--	--
	19	I-405 SB Direct Off-Ramp	Woodruff Avenue	None	0.48	--	--	0.38	--	--	0.52	--	--	0.47	--	--	0.52	--	--	0.41	--	--	--	0.56	--	--	0.51	--	--	0.56	--	--	0.45	--	--	--
		I-405 SB Direct On-Ramp	Woodruff Avenue	None	0.27	--	--	0.19	--	--	0.41	--	--	0.23	--	--	0.43	--	--	0.24	--	--	--	0.45	--	--	0.25	--	--	0.46	--	--	0.26	--	--	--
Palo Verde Avenue / Stearns Street at I-405	20	I-405 NB Direct Off-Ramp	Palo Verde Avenue	Sig	0.54	11.3	B	0.45	13.7	B	0.78	17.7	B	0.61	11.8	B	0.84	17.0	B	0.69	11.8	B	N	0.95	21.2	C	0.70	12.6	B	1.02	22.9	C	0.80	14.0	B	N
		I-405 NB Loop On-Ramp	Palo Verde Avenue	None	0.11	--	--	0.20	--	--	0.13	--	--	0.22	--	--	0.14	--	--	0.22	--	--	--	0.14	--	--	0.23	--	--	0.15	--	--	0.23	--	--	--
	21	Woodruff Avenue	Palo Verde Avenue	Sig	**0.87**	**86.6**	**F**	0.59	21.3	C	0.84	13.6	B	0.66	10.3	B	0.84	13.8	B	0.69	9.7	A	N	0.91	15.9	B	0.72	11.3	B	0.92	16.9	B	0.75	10.3	B	N
	22	Stearns Street	Palo Verde Avenue	Sig	0.73	19.4	B	0.75	25.2	C	0.86	18.9	B	0.83	20.5	C	0.94	22.1	C	0.92	22.9	C	N	0.94	22.0	C	0.92	24.4	C	1.02	30.8	C	1.02	29.9	C	N
	23	Stearns Street	I-405 SB Direct On-Ramp	None	0.28	--	--	0.39	--	--	0.30	--	--	0.46	--	--	0.35	--	--	0.46	--	--	--	0.33	--	--	0.50	--	--	0.38	--	--	0.50	--	--	--

Table 3.1.6-31: Years 2020 and 2040 Peak-Hour Intersections LOS and Adverse Effect Determination after Traffic Measures for Alternative 3 – Locations in Los Angeles County

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2009						Year 2020												No Build-Alternative 3 Adverse Effect	Year 2040												No Build-Alternative 3 Adverse Effect
					Existing Traffic						No Build Traffic on No Build Geometry						Alternative 3 Traffic on Alternative 3 Geometry including Traffic Measures							No Build Traffic on No Build Geometry						Alternative 3 Traffic on Alternative 3 Geometry including Traffic Measures						
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
		East/West Street	North/South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	
Studebaker Road at I-405	24	I-405 NB Direct On-Ramp	Studebaker Road	Sig	0.50	4.0	A	0.55	4.3	A	0.51	2.6	A	0.47	4.7	A	0.63	4.1	A	0.52	4.0	A	N	0.55	2.8	A	0.51	4.9	A	0.68	4.5	A	0.56	3.9	A	N
	25	I-405 SB Direct Off-Ramp	Studebaker Road	Stop	0.15	13.8	B	0.04	10.8	B	**0.86**	**68.4**	**F**	0.34	16.2	C	**1.04**	**80.0**	**F**	0.44	20.4	C	N	**1.02**	**98.3**	**F**	0.33	15.7	C	**1.20**	**116.8**	**F**	0.45	20.1	C	N
				*Sig**	*N/A*						*0.65*	*8.4*	*A*	*0.66*	*5.8*	*A*	*0.69*	*9.3*	*A*	*0.67*	*4.6*	*A*		*0.71*	*9.1*	*A*	*0.72*	*7.0*	*A*	*0.74*	*7.0*	*A*	*0.73*	*5.5*	*A*	
	26	Atherton Street	Studebaker Road	Sig	0.46	9.2	A	0.74	23.3	C	0.54	9.3	A	0.78	13.8	B	0.57	8.8	A	0.81	14.6	B	N	0.60	10.7	B	0.85	15.7	B	0.62	9.7	A	0.88	17.1	B	N
Studebaker Road at SR-22/ 7th Street	27	SR-22 WB On-/Off-Ramp	Studebaker Road	Sig	0.49	16.0	B	0.74	22.1	C	0.46	12.8	B	0.79	28.0	C	0.51	12.8	B	0.87	30.2	C	N	0.50	13.1	B	0.86	30.4	C	0.55	13.2	B	0.94	35.2	D	N
	28	SR-22 EB On-/Off-Ramp	Studebaker Road	Sig	0.72	17.6	B	0.82	17.1	B	0.91	21.3	C	0.93	25.8	C	0.93	25.8	C	0.97	29.0	C	N	0.99	30.4	C	1.03	37.1	D	1.02	37.5	D	1.10	44.4	D	N
	29	SR-22 WB On-/Off-Ramp	College Park Drive	Stop	0.39	18.8	C	**0.65**	**59.9**	**F**	N/A						N/A						N	N/A						**N/A**						N
				Sig*	**N/A**						0.65	14.1	B	**1.07**	**110.1**	**F**	0.61	12.1	B	**1.08**	**125.8**	**F**		0.71	15.5	B	**1.16**	**147.2**	**F**	0.66	13.3	B	**1.17**	**88.0**	**F**	
7th Street	30	7th Street	Pacific Coast Highway	Sig	**0.95**	**92.9**	**F**	**1.03**	**82.6**	**F**	0.94	49.2	D	0.95	35.9	D	0.91	34.8	C	0.95	38.6	D	N	**1.02**	**65.8**	**E**	**1.03**	**58.7**	**E**	0.99	51.8	D	0.99	50.3	D	N
	31	7th Street	Bellflower Boulevard	Sig	**1.01**	**73.6**	**E**	**0.91**	**90.3**	**F**	**1.04**	**68.9**	**E**	0.98	47.9	D	0.93	27.1	C	0.89	33.3	C	N	**1.13**	**82.4**	**F**	**1.06**	**63.0**	**E**	1.01	40.8	D	0.92	37.8	D	N
	32	Pacific Coast Highway	Bellflower Boulevard	Sig	0.47	22.3	C	0.73	22.5	C	0.53	38.8	D	0.70	20.4	C	0.59	32.1	C	0.60	27.7	C	--	0.57	39.1	D	0.82	32.1	C	0.64	34.8	C	0.66	28.4	C	N
	33	7th Street	Channel Drive	Sig	0.72	32.9	C	0.88	30.3	C	0.71	24.5	C	0.94	22.7	C	0.73	15.0	B	0.82	13.2	B	--	0.77	25.7	C	1.02	50.8	D	0.79	11.5	B	0.88	17.1	B	N
	34	7th Street	W. Campus Drive	Sig	**0.83**	**112.9**	**F**	0.72	31.1	C	0.79	31.2	C	0.81	32.0	C	0.67	13.9	B	0.76	24.2	C	--	0.85	53.1	D	**0.87**	**58.5**	**E**	0.81	15.2	B	0.82	39.2	D	N
	35	7th Street	E. Campus Drive	Sig	0.97	23.1	C	0.73	24.7	C	1.03	35.8	D	0.87	14.6	B	0.99	30.8	C	0.88	16.8	B	--	**1.12**	**55.8**	**E**	0.96	16.7	B	1.08	49.7	D	0.97	19.5	B	N
	36	7th Street	Park Avenue	Sig	0.68	12.2	B	0.74	15.7	B	0.69	14.8	B	0.81	19.2	B	0.77	15.1	B	0.85	21.6	C	--	0.82	17.1	B	0.86	23.7	C	0.84	17.5	B	0.85	27.6	C	N

Notes:

1. LOS – Level of Service; V/C – Volume-to- Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio; N/A – Not Applicable (see Note 2)
2. * = Intersection is not signalized under existing or No Build conditions.
   - At the I-405 SB Direct Off-Ramp intersection with Studebaker Road, the signalized row is included only to determine if there is an adverse effect at the intersection. If a stop-controlled intersection has an LOS E or F under future conditions, then the intersection is reanalyzed as a signalized intersection to identify any adverse effects, because stop-controlled analysis does not provide an overall intersection metric.
   - The proposed traffic measure includes installation of a signal at the SR-22 WB On-/Off-Ramp intersection with College Park Drive. To determine if the measure addresses the adverse effect, a comparison is made between the proposed signalized intersection and the no-build condition assuming a traffic signal. The traffic signal is assumed for the no-build condition because stop-controlled analysis does not provide an overall intersection metric to determine if the adverse effect at the intersection has been addressed.
3. Bold indicates an intersection forecast to operate at LOS E or F.
4. Shaded cells indicate an adverse effect.
5. -- = LOS and average delay are not calculated for intersections without traffic control. The adverse effect determination applies only to controlled intersections.
6. Intersection numbers correspond to the intersection numbers shown on the intersection traffic volumes figures.
7. For future conditions, the D/C ratio is used instead of the V/C ratio.

No additional ROW is anticipated to implement the proposed measures. Noise and air quality impacts of construction would be temporary and not anticipated to be an adverse effect. It is anticipated that all of the proposed measures could be implemented without the necessity of closing travel lanes during weekday peak hours. It may be necessary to narrow lanes. Short-term off-peak, nighttime, and weekend lane closures may be necessary. As noted in the traffic measures listed in Section 3.1.6.4, Avoidance, Minimization, and/or Mitigation Measures, the agencies implementing the measures would bear responsibility for necessary clearances and permits.

As stated in Section 3.1.6.4 (Measures T-10 and T-11), if the implementing agencies decide not to move forward with these improvements, cumulative impacts would remain adverse.

Temporary Impacts

No Build Alternative

There are no improvements proposed under the No Build Alternative; therefore, there are no temporary impacts.

Build Alternatives

Potential construction-related traffic and circulation/pedestrian and bicycle impacts would be minimized through implementation of a comprehensive TMP. A Draft TMP, which is an attachment to the Draft Project Report, has been prepared in accordance with the Caltrans Guidelines Deputy Directive 60 (DD-60) to minimize motorist delays when performing work activities on the State Highway System. The TMP is designed to minimize traffic delays that may result from lane restrictions or closures during construction operations and move motorists, pedestrians, and bicyclists through work zones quickly and safely.

An RCS, which is an appendix to the CIA, was prepared for the project. The RCS identifies potential ramp closures during construction, as well as detour routes for ramp closures.

Construction of the project would occur over approximately 48 to 54 months, depending on the build alternative chosen. As discussed in Chapter 2, Project Alternatives, the project proposes to add one or two lanes in each direction. Mainline improvements would also necessitate construction of up to 10 new structures, 18 structure replacements, and 6 structure widening/modifications at the following locations:

New Structures:

I-405/SR-73 Direct Connector Structure (Alternative 3 only)

Harbor Boulevard southbound loop on-ramp structure (Alternative 3 only)

Euclid Street southbound I-405 on-ramp from Ellis Avenue structure over the Santa Ana River

Euclid Street southbound I-405 on-ramp from Ellis Avenue structure over the OCSD driveway

Beach Boulevard northbound loop on-ramp (N39-N405) structure

Beach Boulevard southbound loop on-ramp (S39-S405) structure

East Garden Grove-Wintersburg Channel northbound bridge

East Garden Grove-Wintersburg Channel southbound bridge

Structure Replacements:

Fairview Road Overcrossing (Alternative 3 only)

Ward Street Overcrossing

Talbert Avenue Overcrossing

Brookhurst Street Overcrossing

Slater Avenue Overcrossing

Bushard Street Overcrossing

Warner Avenue Overcrossing

Magnolia Street Overcrossing

Pedestrian Overcrossing near Heil Avenue

Newland Street Overcrossing

Edinger Avenue Overcrossing

McFadden Avenue Overcrossing

Bolsa Avenue Overcrossing

Goldenwest Street Overcrossing

Edwards Street Overcrossing

Westminster Avenue Overcrossing

Springdale Street Overcrossing

Bolsa Chica Road Overcrossing

Structure Widening/Modifications:

Harbor Boulevard Undercrossing widening (Alternative 3 only)

Service Road Undercrossing Box Culvert Extension

Santa Ana River Bridge (left and right) widening

Tieback Walls No. 2200 and 2300 at Route 405/39 Separation

Bolsa Overhead widening (over UPRR)

Navy Overhead widening (over U.S. Navy Railroad)

Construction of the build alternatives would result in construction-related delays along the I-405, I-605, SR-22, and SR-73 freeways and interchanges, as well as on the surrounding local arterials. Temporary and short-term closures would likely be required and would occur intermittently throughout the construction duration. Full freeway lane, ramp, and arterial street closures could also be required and would likely occur during the nighttime and on weekends during various roadway and structure construction activities. Prolonged closure, ranging from 10 days to 12 months, is also anticipated to facilitate construction of certain interchange ramps, arterials, and overcrossing structures. Based on the RCS, the following 12 ramps are expected to be closed between 10 and 30 days:

Northbound ramp from C-D Road to South Coast Drive

Northbound off-ramp from C-D Road to Fairview Road

Northbound on-ramp from Fairview Road

Southbound off-ramp to Fairview Road

Northbound on-ramp from northbound Harbor Boulevard

Southbound on-ramp from northbound Harbor Boulevard

Southbound on-ramp from Talbert Avenue

Southbound on-ramp from Warner Avenue

Southbound off-ramp to Magnolia Street

Southbound on-ramp from Bolsa Avenue

Southbound on-ramp from Westminster Avenue

Southbound off-ramp to Seal Beach Boulevard

Tentative detours for the ramp closures listed above are identified in the RCS, and these will be reviewed in greater detail during preparation of the Final TMP. Agreements with local agencies on detours using local streets will be needed when the Final TMP has been prepared during the project's final design.

It is anticipated that the following bridges would be fully closed for 8 to 12 months during their replacement, while the remaining bridges would remain open with a reduced number of lanes during replacement:

Ward Street Overcrossing

Talbert Avenue Overcrossing

Slater Avenue Overcrossing

Bushard Street Overcrossing

Newland Street Overcrossing

Edinger Avenue Overcrossing

McFadden Avenue Overcrossing

Edwards Street Overcrossing

The Draft TMP includes preliminary detour plans for fully closed bridges, which will be finalized in the Final TMP, which will also include provision for warning notices to motorists of bridges with reduced lanes and potential delays.

The Draft TMP indicates that a staged construction approach would be employed to construct the entire project due to the scale of the project and the need to maintain traffic during construction. There are numerous approaches to staging the construction of this 16-mile-long project, and the Draft TMP presents only one. Further constructibility analysis will be performed after public comment and during final design. The Final TMP will be prepared during the plans, specifications, and estimate (PS&E) phase that will require minimization of construction-related effects on traffic and circulation/pedestrian and bicyclists by applying a variety of techniques, including Public Information, Motorist Information, Incident Management, Construction Strategies, Demand Management, and Alternate Route Strategies. During the course of project construction, the Traffic Management Team will observe traffic conditions and make recommendations to the Resident Engineer concerning any changes that need to be made with respect to traffic management. The TMP Coordinator will work closely with the Traffic Management Team to develop timely recommendations to address traffic-related effects on traffic and circulation/pedestrians and bicyclists. The Final TMP will be prepared prior to project construction and will address traffic detours for roadway closures during construction. The Final TMP will also avoid and minimize construction-related traffic and circulation effects of the proposed project.

Pedestrian and Bicycle Facilities:

There are two Class 1 bikeways within the project limits. One, along the eastern bank of the Santa Ana River, is expected to require temporary closure during project construction, as discussed in Section 3.1.1.4.2, Parks and Recreational Facilities (Environmental Consequences). The other Class I bikeway is along the San Gabriel River, which would not be affected by the proposed project and would remain open during project construction. Class 2 bikeways along arterial streets will be closed consistent with the closures of the arterial roadways. The timing, locations, and detours for these closings will be identified in the Final TMP, which will be prepared prior to project construction. Closure of pedestrian facilities, including facilities with